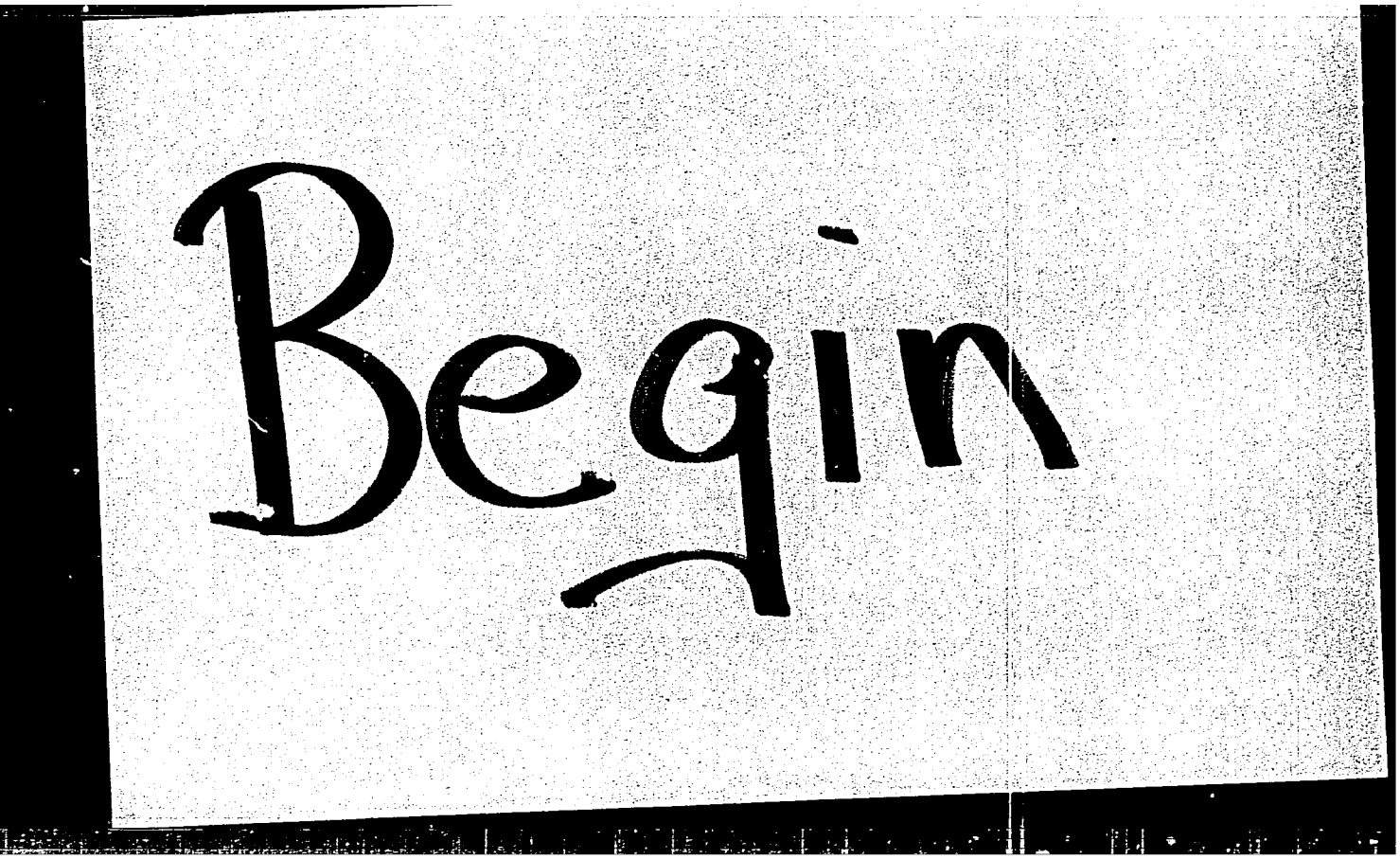
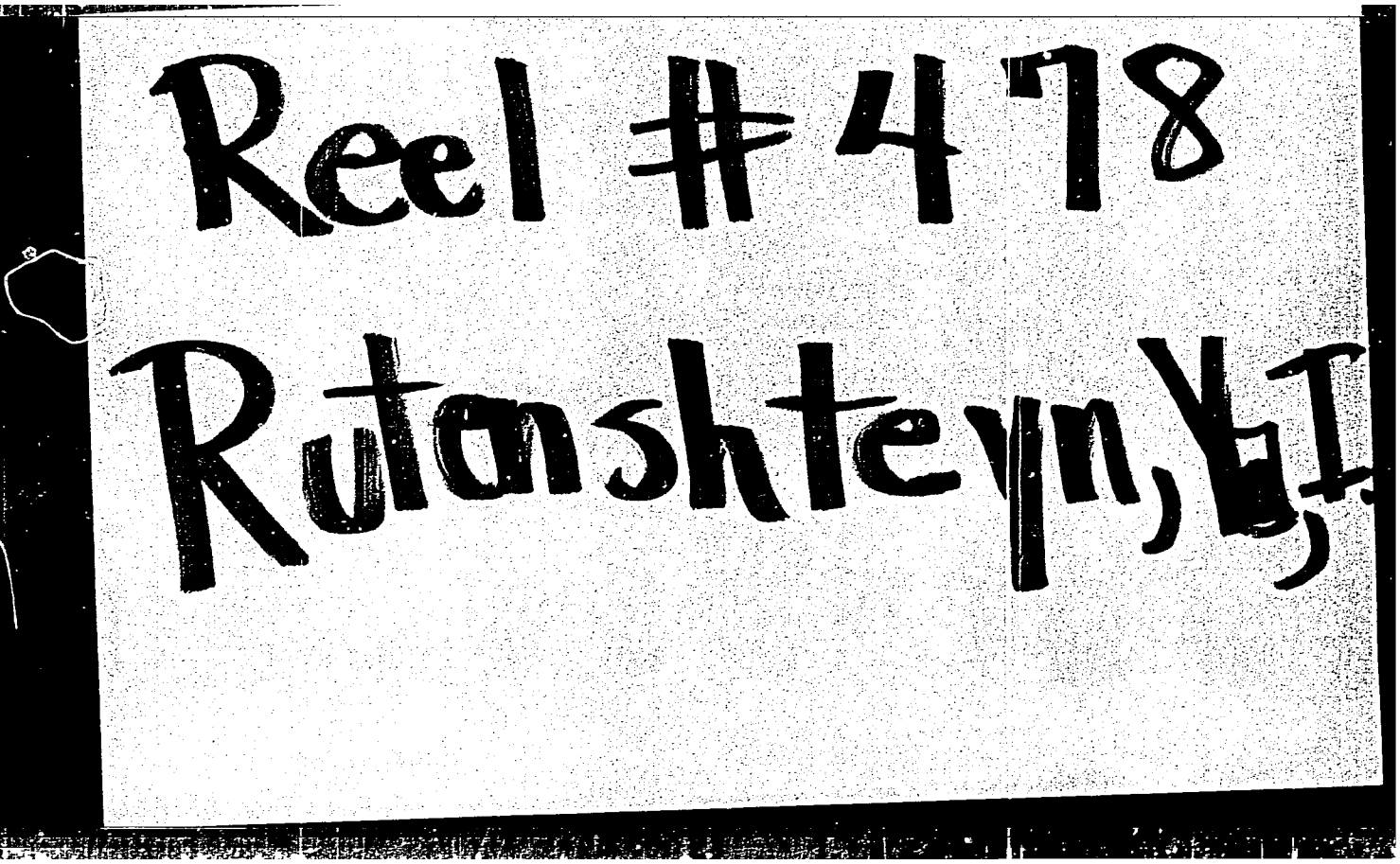




1. [illegible], M. A. and RUTENBURGEYN, YA. I. and SOROKINA, M. I. and CHEREBNICHENKO, A. F. and SHARKOVA, A. S.

2. USSR (600)

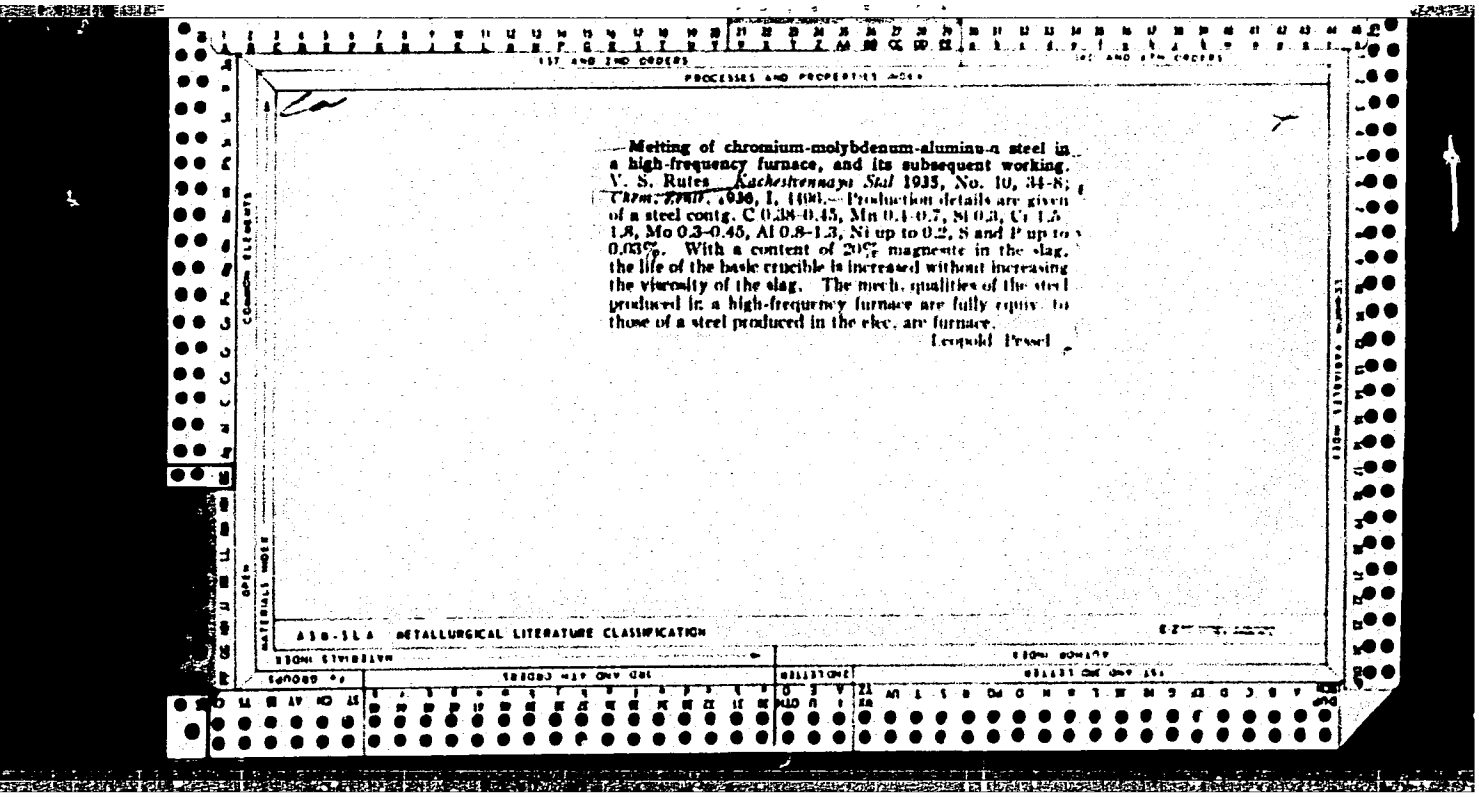
4. Actinomyces

7. Cytological modification of mycelium of Actinomyces globisporus in lysis under the effect of actionphage. Mikrobiologiia 21 no. 6, 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953, Unclassified.

RUTERMAN, I. I., BRILLING, N. G. and VIKERT, M. M.

"Highspeed Diesels", Masgiz, 1951.

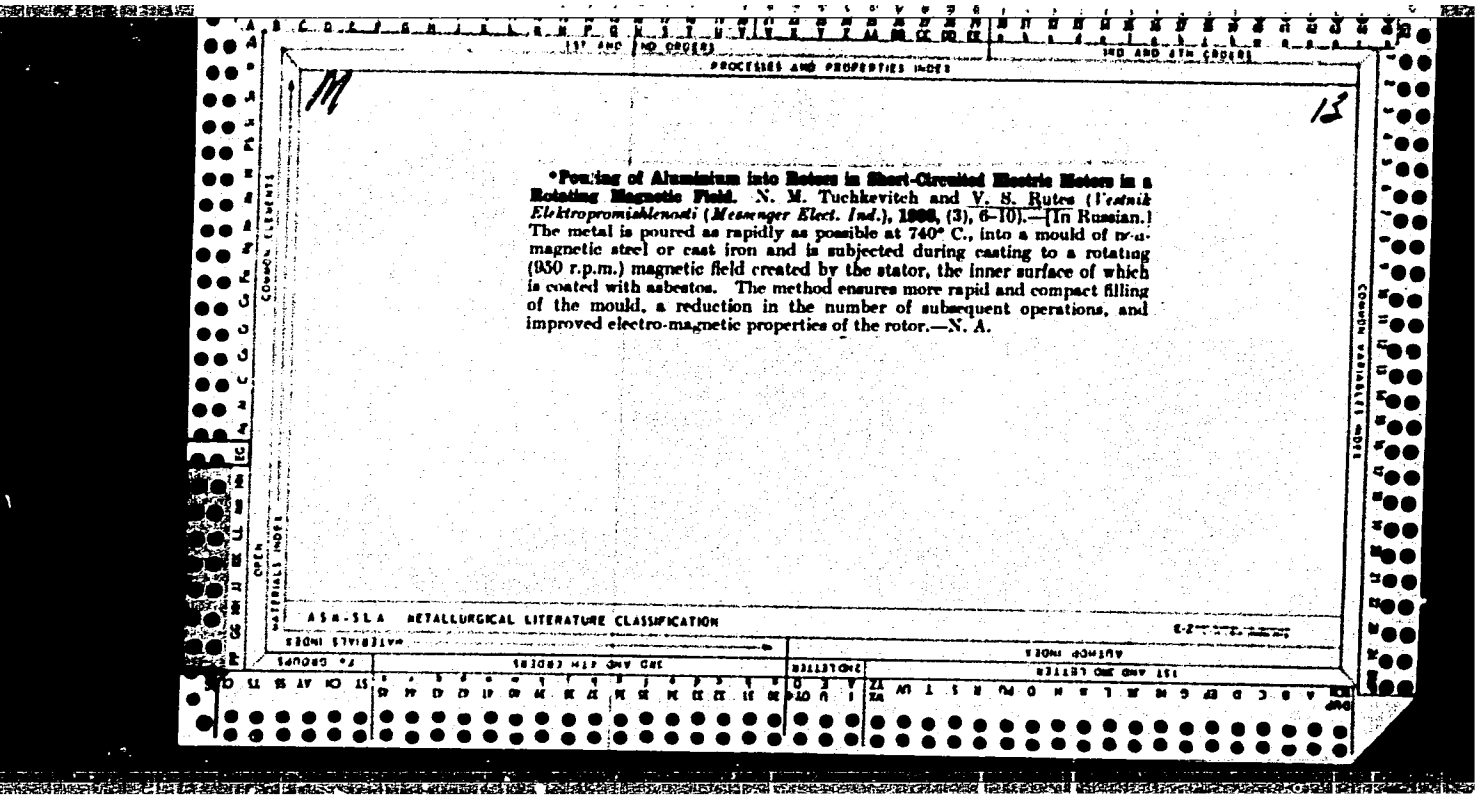


PROCESSES AND PROPERTIES INDEX

—Melting of chromium-molybdenum-aluminum steel in a high-frequency furnace, and its subsequent working. V. S. Rutes *Kachestvennaya Stal* 1935, No. 10, 34-8; *Chem. Zentr.*, 1936, I, 1408.—Production details are given of a steel contg. C 0.38-0.45, Mn 0.4-0.7, Si 0.3, Cr 1.5-1.8, Mo 0.3-0.45, Al 0.8-1.3, Ni up to 0.2, S and P up to 0.03%. With a content of 20% magnesite in the slag, the life of the basic crucible is increased without increasing the viscosity of the slag. The mech. qualities of the steel produced in a high-frequency furnace are fully equiv. to those of a steel produced in the elec. arc furnace.

Leopold Prsel

A58-51A METALLURGICAL LITERATURE CLASSIFICATION

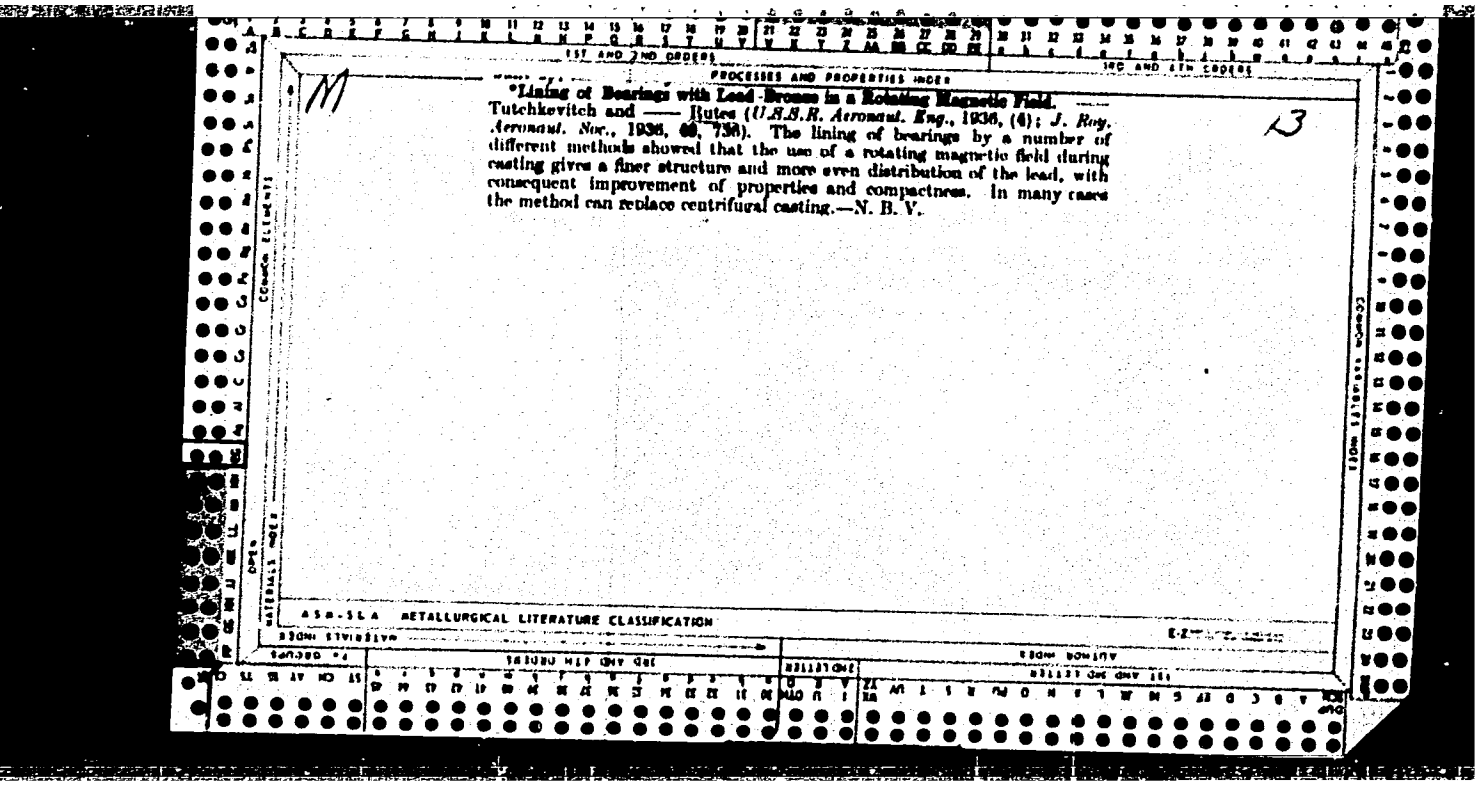


M

13

***Pouring of Aluminium into Rotors in Short-Circuited Electric Motors in a Rotating Magnetic Field.** N. M. Tuchkevitch and V. S. Rutes (*Vestnik Elektropromishlennosti* (*Messenger Elect. Ind.*), **1938**, (3), 6–10).—[In Russian.] The metal is poured as rapidly as possible at 740° C., into a mould of non-magnetic steel or cast iron and is subjected during casting to a rotating (950 r.p.m.) magnetic field created by the stator, the inner surface of which is coated with asbestos. The method ensures more rapid and compact filling of the mould, a reduction in the number of subsequent operations, and improved electro-magnetic properties of the rotor.—N. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



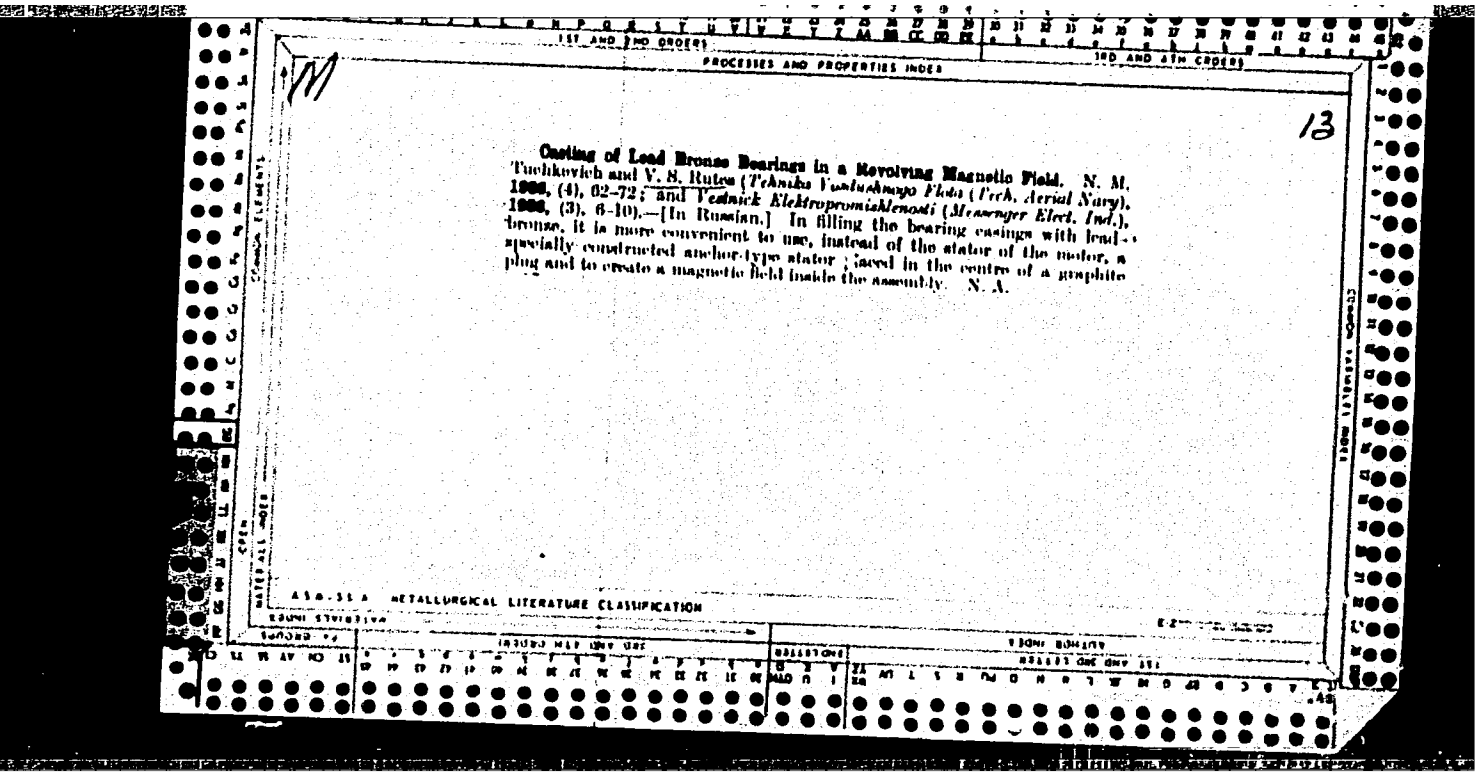
PROCESSES AND PROPERTIES INDEX

M

***Lining of Bearings with Lead-Bronze in a Rotating Magnetic Field.** — Tutchkevitch and —— Ilutes (*U.S.S.R. Aeronaut. Eng.*, 1936, (4); *J. Roy. Aeronaut. Soc.*, 1936, **40**, 738). The lining of bearings by a number of different methods showed that the use of a rotating magnetic field during casting gives a finer structure and more even distribution of the lead, with consequent improvement of properties and compactness. In many cases the method can replace centrifugal casting.—N. B. V.

13

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

13

Casting of Lead Bronze Bearings in a Revolving Magnetic Field. N. M. Tuchkevich and V. S. Rutes (*Trudy Voenno-Vozdushnoy Akademii* (*Tech. Aerial Navy*), **1938**, (4), 62–72; and *Vestnik Elektropromishlennosti* (*Messenger Elect. Ind.*), **1938**, (3), 6–10).—[In Russian.] In filling the bearing casings with lead-bronze, it is more convenient to use, instead of the stator of the motor, a specially constructed anchor-type stator placed in the centre of a graphite plug and to create a magnetic field inside the assembly. N. A.

A 5 6 - 5 5 A METALLURGICAL LITERATURE CLASSIFICATION

BOYCHENKO,M.S., ref.; RUTES,V.S.; NIKOLAYEV,N.A.

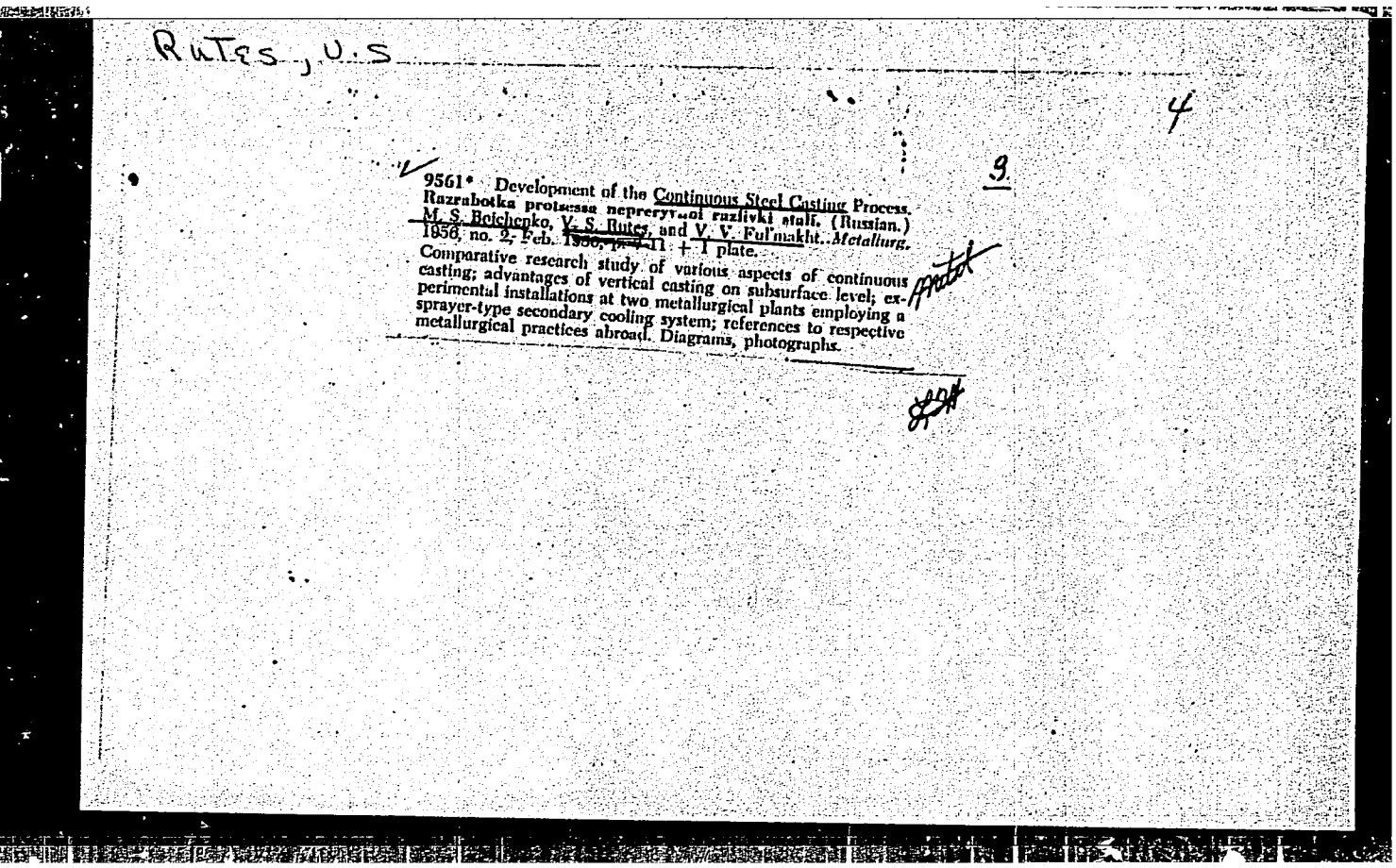
Growth of continuous steel casting (From foreign perodicals)
Stal' 15 no.8:762-765 Ag'55. (MLRA 8:11)
(Steel industry)

RUTES, Viktor Savel'yevich; YEVTEYEV, Dmitriy Petrovich

[Continuous casting of steel] Nepreryvnaia razlivka stali. Moskva, Znanie, 1956. 30 p. (Vsesoiuznoe obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii. Seriia 4, no.38) (MIRA 12:10)
(Founding) (Steel)

BOYCHENKO,M.S., kandidat tekhnicheskikh nauk; RUTES,V.S., kandidat tekhnicheskikh nauk; NIKOLAYEV,N.A.; BARDIN,I.P., akademik, redaktor; ASTAF'YEVA,O.A., tekhnicheskiy redaktor

[Continuous casting of steel] Nepreryvnaia razlivka stali. Moskva, Izd-vo Akademii nauk SSSR, 1956. 50 p. (MLRA 9:3)
(Steel castings)



Ruts, U.S

4

9.

9561* Development of the Continuous Steel Casting Process. Razrabotka protsessa nepreryvnoi razlivki stali. (Russian.) M. S. Boichenko, V. S. Ruts, and V. V. Ful'makht. *Metallurg*, 1956, no. 2, Feb. 1956, pp. 7-11 + 1 plate.

Comparative research study of various aspects of continuous casting; advantages of vertical casting on subsurface level; experimental installations at two metallurgical plants employing a sprayer-type secondary cooling system; references to respective metallurgical practices abroad. Diagrams, photographs.

RUTES, V. S.

137-1958-2-2506

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 46 (USSR)

AUTHORS: Rutes, V. S., Yevteyev, D. P.

TITLE: An Investigation of the Process of Continuous Casting of Steel (Issledovaniye protsessa nepreryvnoy razlivki stali)

PERIODICAL: V sb.: Nepreryvnaya razlivka stali, Moscow, AN SSSR, 1956, pp 5-48

ABSTRACT: The thickness of the skin upon emergence from the crystallizer, determined by introducing radioactive isotopes of S or P into the ingot, was found to be: 50 mm on the broad face and 40 mm on the narrow face (when the casting speed was 400 mm/min; 42 mm on the broad face and 33 mm on the narrow face (when the speed was 700 mm/min). The skin grew more rapidly in the upper part of the crystallizer, i.e., in the region of immediate contact between the ingot and the crystallizer; the extent of this contact zone along the broad face was 400-600 mm, depending on the speed of casting. Below the contact zone the heat removal greatly decreased. For the purpose of increasing heat removal a crystallizer is recommended which narrows or tapers toward the bottom. When the surface of the ingot below the crystallizer was abruptly

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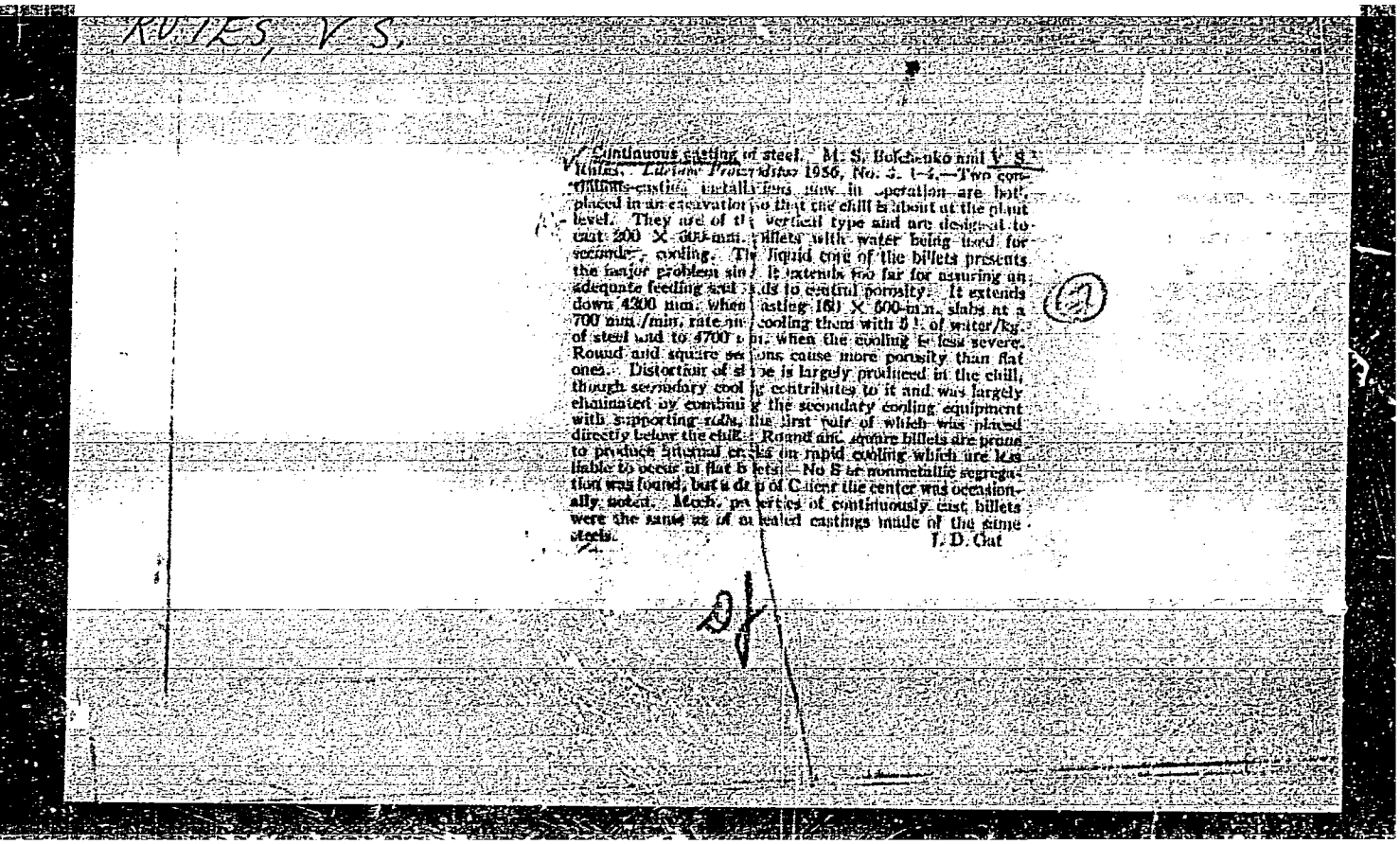
An Investigation of the Process of Continuous Casting of Steel

cooled with jets of water (5 liters per kilogram of steel), hot cracks developed internally. "Soft"-cooling the surface of the ingot with a roller spray which applied the water evenly (1 liter per kilogram of steel), over a section appx. 3 m long, removed the cracks. The force of friction between the crystallizer and an ingot having an approximate diameter of 200 mm (the casting speed being 600 mm/min) was 400 kg when no lubricant was used on the walls of the crystallizer, and 200-250 kg when the interior was greased with paraffin. The use of a reciprocating-motion crystallizer facilitated introduction of the lubricant, reduced friction, eliminated "hanging up" and tears in the skin, and it became possible to increase the casting speed from 600 to 1200 mm/min. A description is given of methods of computing the heat exchange and crystallization in the region of the crystallizer and in the region of secondary cooling. Computation results accorded well with experimental findings. See also RzhMet, 1956, Nr 11, 11866, 11868.

N. N.

Card 2/2

1. Steel castings--Production processes



KULES, V. S.

Continuous casting of steel. M. S. Bolchenko and V. S. Kules. *Liteinoe Proizvodstvo* 1956, No. 3, 1–2.—Two continuous-casting installations now in operation are both placed in an excavation so that the chill is about at the plant level. They are of the vertical type and are designed to cast 200 × 400-mm. billets with water being used for secondary cooling. The liquid core of the billets presents the major problem since it extends too far for assuring adequate feeding and leads to central porosity. It extends down 4200 mm. when casting 160 × 600-mm. slabs at a 700 mm./min. rate and to 4700 mm. when the cooling is less severe of steel and to 4700 mm. when the cooling is less severe. Round and square sections cause more porosity than flat ones. Distortion of the core is largely produced in the chill, though secondary cooling contributes to it and was largely eliminated by combining the secondary cooling equipment with supporting rolls, the first pair of which was placed directly below the chill. Round and square billets are prone to produce internal cracks in rapid cooling which are less liable to occur in flat billets. No S or nonmetallic segregation was found, but a deposit of C-iron the center was occasionally noted. Mech. properties of continuously cast billets were the same as of ordinary castings made of the same steels.

I. D. Cat

Rutes, V.S.

9-emy

6559* Study of the Continuous Casting Process for Steel. Issledovanie protsessa nepreryvnoi razlivki stali. (Russian.) V. S. Rutes, N. A. Nikolaev, D. P. Evteev, and V. P. Druzhinin. Stal', v. 16, no. 1, Jan. 1956, p. 62-66.

Use of radioactive isotopes and measurement of temperatures within the casting make it possible to determine depth of the liquid phase, location of the crystallization front, and the average rate of solidification. Graphs, tables. 8 ref.

(3)

LFH

RUTES, V.S.; PROMOV, A.P.

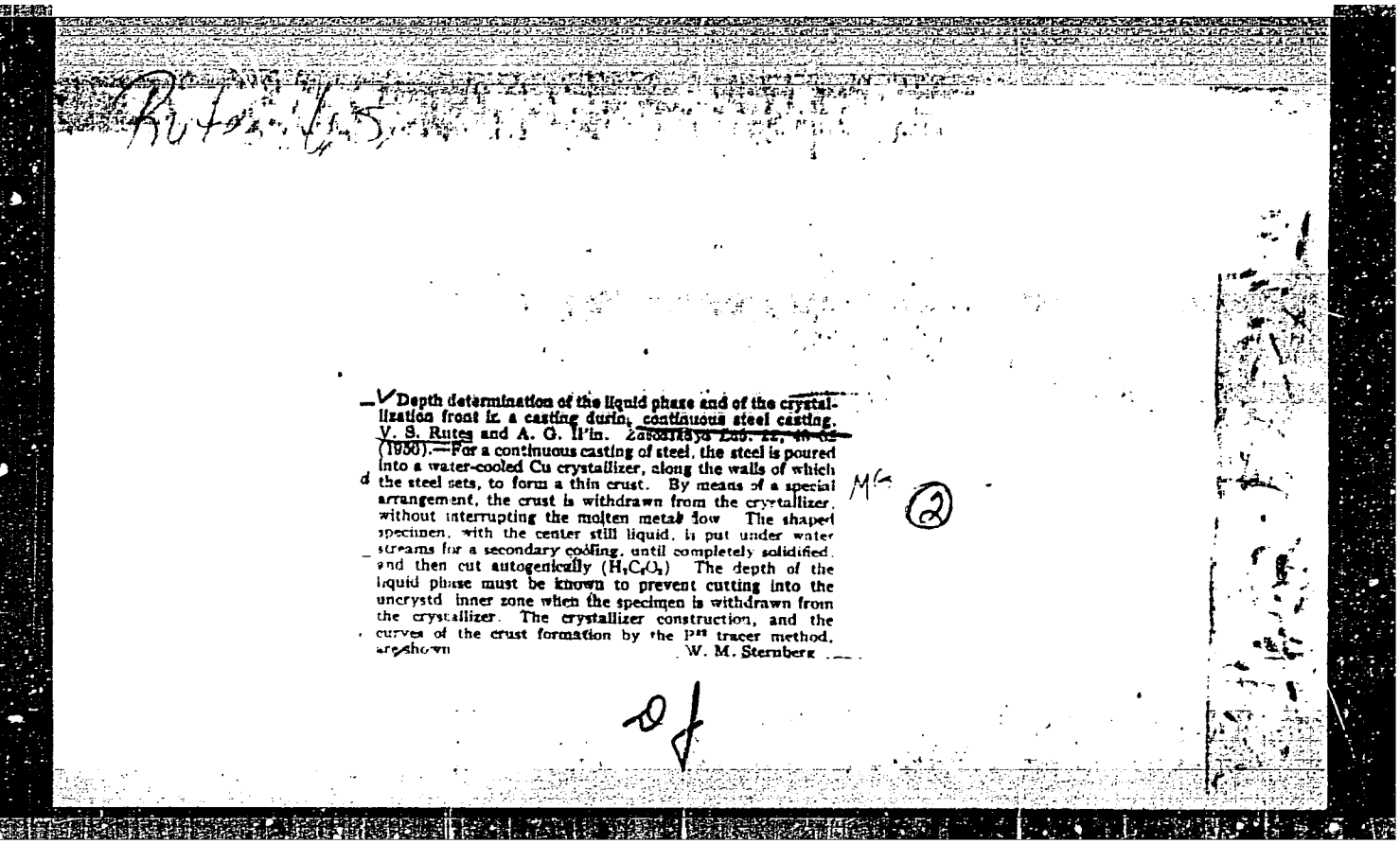
Conference on continuous pouring of steel. Stal' 16 no.3:263-265 Mr '56. (Smelting--Congresses) (MLRA 9:7)

BOYCHENKO, M.S., kandidat tekhnicheskikh nauk; RUTES, V.S., kandidat tekhnicheskikh nauk; NIKOLAYEV, N.A., inzhener.

Developing and adopting the continuous steel pouring process. Stal' 16 no.6:505-513 Je '56 (MLRA 9:8)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii.

(Smelting)



Depth determination of the liquid phase and of the crystallization front in a casting during continuous steel casting. V. S. Rutes and A. G. Il'in. Zavodskaya Lab. 22, 46-52 (1956).—For a continuous casting of steel, the steel is poured into a water-cooled Cu crystallizer, along the walls of which the steel sets, to form a thin crust. By means of a special arrangement, the crust is withdrawn from the crystallizer, without interrupting the molten metal flow. The shaped specimen, with the center still liquid, is put under water streams for a secondary cooling, until completely solidified, and then cut autogenically ($H_2C_2O_4$). The depth of the liquid phase must be known to prevent cutting into the uncrystd inner zone when the specimen is withdrawn from the crystallizer. The crystallizer construction, and the curves of the crust formation by the P^{32} tracer method, are shown. W. M. Sternberg

RUTES, V.S., kandidat tekhnicheskikh nauk; YEVTEYEV, D.P., inzhener.

Continuous pouring of steel. Nauka i zhizn' 23 no.2:28-32 F '56.
(MLRA 9:5)

(Steel--Metallurgy)

RUTES, Viktor Savel'yevich; KATOMIN, Boris Nikolayevich; KORNFEL'D, L.I., nauchnyy redaktor; SEREBRENNIKOVA, L.A., redaktor; MATUSEVICH, N.L., tekhnicheskiy redaktor

[Continuous casting of steel] Nepreryvnaia razvivka stali. Moskva, Vses.uchebno-pedagog.izd-vo Trudrezervizdat, 1957. 81 p. (MLRA 10:9)
(Steel--Metallurgy) (Founding)

RUTES, V.

Continuous steel casting in the USSR. p.500.
(Hutnicke Listy, Vol. 12, No. 6, June 1957, Brno, Czechoslovakia)

SO: Monthly List of East European Accessions (EEAL) LC. Vol. 6, No. 9, Sept. 1957. Uncl.

Rutes, V.S.

AUTHOR KATOMIN, B.N., RUTES, V.S. PA - 2162

TITLE The Investigation of the Process of Uninterrupted Racking of Steel by Means of Radioactive Isotopes (Issledovaniya protsessa nepreryvnoy razlivki stali s pomoshch'yu radioaktivnykh izotopov).

PERIODICAL Izvestiia Akad. Nauk SSSR, Otdel.Tekhn., 1957, Nr 1, pp 123-135 (U.S.S.R.)

Received 3/1957 Reviewed 4/1957

ABSTRACT Investigations were carried out in the ZNIICHM (Central Scientific Research-Institute for the Metallurgy of Iron) and the processes of heat transfer and of the crystallization of steel in the case of uninterrupted racking were examined. The dependence between the depth of the liquid phase and distribution of the crystallisation front and the velocity in the blank, the quantity of the transferred heat, the velocity of the filling, the intensity of the cooling, the physical properties of the metal and the peculiarities of the construction of some parts was determined by the radiographic method. The following conclusions were arrived at: the forming of a solid bark on the blank in the crystallizer is due to the same rules that determine the growth of the bark on the occasion of the hardening of the steel block in the mold in the initial stages of crystallization. The amount of the mean hardening coefficient depends on the penetration of water into the gap between the blank and the walls of the crystallizer, which leads to a growth of the thickness of the bark at the outlet of the crystallizer. Gas pressure which occurs as the result of shrinking between the walls of the crystallizer and the

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The Investigation of the Process of Uninterrupted Racking of Steel by Means of Radioactive Isotopes.

surface of the solid bark exercises a decisive influence on the regularity of heat elimination and on the crystallization of steel in the crystallizer. The thermal resistance of the gap is about 90% of the total resistance of the system. The average hardening velocity of the blank in the zone of renewed cooling does not depend on the intensity of the renewed cooling. This renewed cooling is, from the technological point of view, only correct if it has a zone extension which warrants termination of the hardening process in this zone and regularly supplies the quantities of water which are necessary for the uninterrupted drop of the surface temperature until the termination of the continuous hardening of the blank. However, this temperature must not drop to that of transition into the field of elastic deformations.
(10 illustrations and 5 tables)

ASSOCIATION Not given
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SUBMITTED 15. 8. 1956
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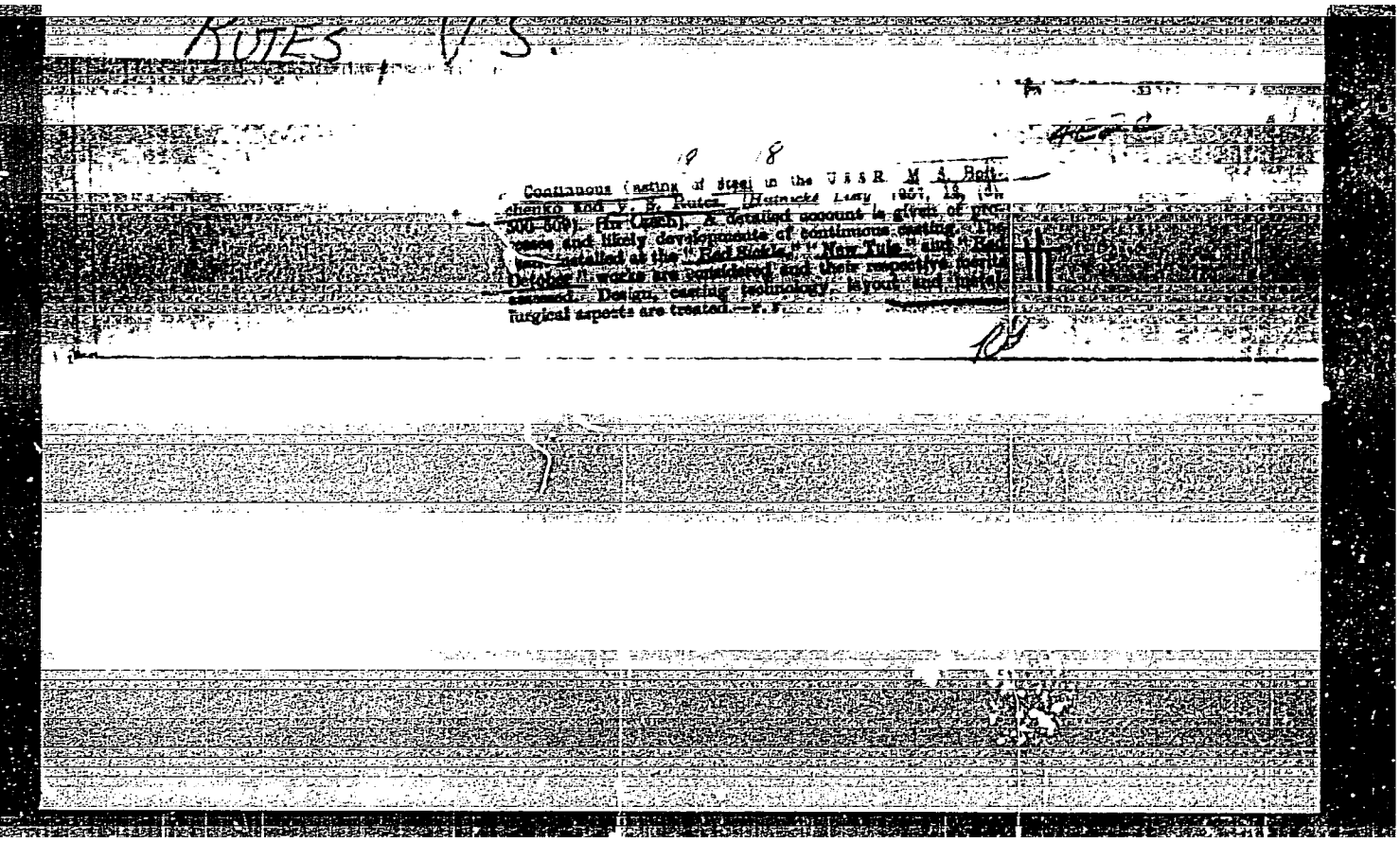

RUTES V.S.

Continuous casting of steel in the U S S R. M. A. Rofi-
chenko and V. P. Puzei. [Hutnicke Listy, 1957, 12, 1-
900-909]. (In Czech). A detailed account is given of pro-
gress and likely developments of continuous casting. The
plant installed at the "Red Sizzler" "New Tula" and "Red
October" works are considered and their respective merits
assessed. Design, casting technology, layout and metal-
lurgical aspects are treated.—F. J.

SOV/137-58-7-14479

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 79 (USSR)

AUTHOR: Rutes, V.S.

TITLE: Continuous Casting of Steel (Nepreryvnaya razlivka stali)

PERIODICAL: Tr. Nauchno-tekhn. o-va chernoy metallurgii, 1957, Vol 18, pp 83-90

ABSTRACT: Various methods of continuous casting of steel employed in the Soviet Union are examined. The author comments on advantages and drawbacks of installations for continuous casting employing inclined crystallizer units and intermittent or periodically varying cycles of movement of the castings. The method of vertical casting in which the stock is continuously moving is regarded as being the most rational. Two methods of casting of liquid metal are compared, namely, the pouring of metal through the opening of the ladle and the method of bottom casting. The design of installations for continuous casting of steel at the plants "Krasnyy Oktyabr'" (Red October), the Novotul'skiy metallurgical plant, and the "Krasnoye Sormovo" is described. Certain basic production and cost indices of these plants are shown, together with data on the output of the

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SOV/137-58-7-14479

Continuous Casting of Steel

plants and the quality of production. The prospects for the development of continuous casting methods are examined.

N.N.

1. Steel castings--Production

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SAMARIN, A.M.; YEFIMOV, L.M.; VESELKOV, N.G.; ORMAN, R.Z.; SHABANOV, A.N.; MOROZENSKIY, L.I.; GRANAT, I.Ya.; TOCHINSKIY, A.S.; ALYAVDIN, V.A.; DANILOV, P.M.; PETRIKEYEV, V.I.; POPOV, B.N.; BOBKOV, T.M.; ROSTKOVSKIY, S.Ye.; GAVRISH, D.I.; D'YAKONOV, N.S.; TIMOSHPOL'SKIY, M.N.; ROMANOV, V.D.; POCHTMAN, A.M.; MELESHKO, A.M.; PODGORETSKIY, A.A.; OFENGENDEN, A.M.; BRONSHTEYN, V.M.; PRIDANTSEV, M.V.; LIVSHITS, G.L.; ROZHKOV, V.A.; RUTES, V.S.

Reports (brief annotations). Biul. TSNIICHM no.18/19:15-16 '57. (MIRA 11:4)

1. Chlen-korrespondent AN SSSR (for Samarin). 2. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii (for Rutes, Rostkovskiy, Pridantsev, Livshits, Rozhkov). 3. Stal'proyekt (for Shabanov). 4. Kuznetskiy metallurgicheskiy kombinat (for Alyavdin, Danilov, Petrikeyev). 5. Zavod "Elektrostal'" (for Popov). 6. "Dneprospetsstal'" (for Bobkov). 7. Glavogneupor Ministerstva chernoy metallurgii SSSR (for Gavrish). 8. Planovoye upravleniye Ministerstva chernoy metallurgii SSSR (for D'yakonov). 9. Otdel rabochikh kadrov, truda i zarplaty Ministerstva chernoy metallurgii SSSR (for Timoshpol'skiy). 10. Glavvtorchermet Ministerstva chernoy metallurgii SSSR (for Romanov). 11. Giprostal' (for Pochtman). 12. Zavod im. Voroshilova (for Meleshko). 13. Zavod "Zaporozhstal'" (for Podgoretskiy). 14. Stalinskiy metallurgicheskiy zavod (for Ofengenden). 15. Nizhne-Tagil'skiy metallurgicheskiy kombinat (for Bronshteyn).

(Steel--Metallurgy)

BOYCHENKO, Mikhail Stepanovich; MILLER, Abram Isaakovich; MIKHAYLOV, Oleg Aleksandrovich, MYRTSYMOV, Aleksandr Fedorovich; NIKOLAYEV, Nikolay Alekseyevich; NESTESIN, Aleksandr Yevgrafovich; ORMAN, Mikhail Yeremeyevich; RUTES, Viktor Savel'yevich; GORDON, L.M., red.; BEKKER, O.G., tekhn. red.

[Ferrous metallurgy of capitalist countries] Chernaia metallurgiia kapitalisticheskikh stran. Pt.3. [Steel smelting] Staleplavil'noe proizvodstvo. Boichenko, M.S., and others. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1958. 740 p. (MIRA 11:7)

1. Moscow. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii.

(Steel--Metallurgy)

RUTES, V.S.

133-58-5-13/31

AUTHORS: Lopatyshkin, N. M., Candidate of Technical Science, ~~Rutes, V. S.~~, Candidate of Technical Science and Gurskiy, G. V., Engineer

TITLE: An Investigation of the Quality of Continuously Cast Transformer Steel (Issledovaniye kachestva transformatornoy stali nepreryvnoy razlivki)

PERIODICAL: Stal', 1958, Nr 5, pp 417-425 (USSR)

ABSTRACT: In 1956-7 TsNIICHM in cooperation with Novo-Tulskiy (NTMZ) and Verkh Isetskiy Works and later with the Urals Institute of Metals carried out a study of continuous casting of transformer steel into slabs 470 x 150 mm and blooms 200 x 200 mm. Steel was produced in 5 and 10 ton electric furnaces. Altogether nineteen heats with silicon content 4.0 to 4.5% were cast into slabs (including twelve electric heats and two convertor heats blown with oxygen) and fifteen heats with silicon content 3.0 to 3.5% were cast into blooms. In the present paper no details of continuous casting are given. The paper deals with the following problems: the quality of the surface of cast semis, cutting of semis, cooling conditions of semis, structure of semis, non-metallic inclusions and chemical

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An Investigation of the Quality of Continuously Cast Transformer Steel

non-uniformity of cast semis, rolling of semis into sheet billets and sheets, thermal treatment of rolled sheets and the quality of sheets. Altogether five heats were investigated. Fig.1 - changes in the crust thickness during continuous casting of slabs of transformer steel and the crystallisation front at a casting velocity of 0.7 m/min (crystalliser-mould 1400 mm long of a cross section 150 x 500 mm). A - the thickness of the crust of wide face, b - of narrow face; Fig.2 - the dependence of specific pressure on the preheating temperature of dynamo (E-11) and transformer (E-41) steels at 45% reduction; Fig.3 - the dependence of plastic properties (relative elongation and relative reduction) of transformer steel on the testing temperature; Fig.4 - the position of cold cracks in cast slabs cooled in air; Fig.5 - macrostructure of transverse templets of slabs at high (a) and low (b) casting temperatures and (c) of blooms; Fig.6 - fracture of slab; Fig.7 - microstructure of undercrust (a) and columnar (b) zones of cast slab; Fig.8 - changes in the chemical composition along the cross section of slabs;

 Fig.9 - distribution of non-metallic inclusions along the

An Investigation of the Quality of Continuously Cast Transformer Steel

cross section of slabs; Fig.10 - comparison of specific losses (P 10) for sheets of normal and experimental production (a and a_1); Fig.11 - comparison of plastic properties of sheets from experimental (b and g) and normal production (a); Fig.12 - structure of not annealed sheets from a cast slab; Fig.13 - structure of sheets after electro-vacuum annealing. Table 1 - the composition of non-metallic inclusions in transformer steel; Table 2 - chemical composition of tested sheets. Conclusions:
1. The possibility of continuous casting of transformer steel into rectangular and square semis without decreasing its electric properties was established.
2. Due to a high plasticity of transformer steel at temperatures above 950 to 1000°C and in view of a considerable casting velocity a partial reduction of cast semis in drawing rolls is possible.
3. The structure of continuously cast semis depends mainly on the metal temperature; globular, grainy structure without transcrystallisation zone is obtained at low casting temperatures.

An Investigation of the Quality of Continuously Cast Transformer Steel

4. Silicon ferrite is more resistant to the formation of internal and surface hot cracks during continuous casting than open hearth St.3 steel. Porosity, internal cracks and shrinkage cavities in transformer steel are welded during rolling.
5. Cast slabs should be annealed at 650 to 700°C in order to remove internal stresses and cooled slowly in the temperature range 300 to 50°C (cooling in stacks is possible). Cast square semis can be cooled and stacked (without high annealing) as they are more resistant than slabs to the formation of transverse cold cracks.
6. Flame cutting of continuously cast semis is possible only when their temperature is not lower than 300 to 400°C.
7. Mechanical properties (plasticity) of transformer sheets from continuously cast semis is higher than those made from ordinary ingots. This permits increasing silicon content of steel in cast slabs and thus improves the electro-technical properties of transformer sheets.
There are 2 tables, 13 figures and 3 references, all of which are Soviet.

133-58-5-13/31

An Investigation of the Quality of Continuously Cast Transformer Steel

ASSOCIATION: TsNIIChM, Novo-Tul'skiy metallurgicheskiy zavod)
(TsNIIChM, Novo-Tulskiy Metallurgical Works)

Card 5/5

SOV/130-58-10-6/18

AUTHOR: Rutes, V.S. and Nikolayev, N.A.

TITLE: Continuous Casting of Steel into Square Billets (Nepreryvnaya razlivka stali v kvadratnyye zagotovki).

PERIODICAL: Metallurg 1958, Nr.10, pp.15-18 (USSR)

ABSTRACT: In 1953 a continuous-casting installation, designed by Stal'proyekt on the basis of research by TsNIIChM, was built at the Novo-Tul'skiy metallurgical works. Up to the end of 1956 only slabs (150 x 500 mm) were cast, but later square (200 x 200 mm) billets were cast. The authors point out the greater difficulties of casting square billets and mention that the productivity of the machine fell from 30-35 tons/hr for the slabs to about 15 for 150 x 150 mm square billets. To maintain productivity a mould for casting two billets simultaneously with a two-stopper tundish serving the two-billet mould (Fig.5) was adopted (Figs.1,6). Below the mould is a 7 m long secondary cooling system (sprays) (Fig.7), and this is followed by two stands of withdrawal rolls at 3 and 8 m (Fig.3) below floor level and by the flame-cutting

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Continuous Casting of Steel into Square Billets.

installation. The cut billets are discharged on to a roller table (Fig.4) at 19 m below floor level which conveys them to a lift for lifting to storage. Steels type St.3, St.5, U7-U13, and SkhL1-SKhL4 have been successfully cast into 200 x 200 mm billets. To give better jets of metal the nozzle diameters have been reduced to 25 mm: they are of fireclay-graphite composition and are heated by the passage through them of electricity. In the 1.5 m long mould the faces for the two billets are of copper (paraffin-lubricated) backed by steel with water circulating between them. The whole mould is given a reciprocating vertical motion facilitated by lubricant, which also creates a protective atmosphere. Experience has shown that a speed of 0.7 - 1.1 m/min is best for St.3-St.5 steel, higher speeds leading (for the installation dimensions described) to poor structure largely through the reduction effected by the withdrawing rolls. Secondary-cooling water consumption of over 0.2 l/kg steel also produces internal cracks. The experience gained with this installation has served as the basis for

Continuous Casting of Steel into Square Billets.

the design of others now being built in the USSR.
There are 7 figures.

ASSOCIATION: TsNIIChM

Card 3/3

AUTHORS: Rutes, V.S. and Leytes, V.A. SOV/128-58-12-6/21

TITLE: Shrinkage Phenomena in Steel Ingots in Continuous Casting (Usadochnyye yavleniya v stal'nykh zagotovkakh pri neprerywnom lit'ye)

PERIODICAL: Liteynoye proizvodstvo, 1958, Nr 12, pp 10 - 12 (USSR)

ABSTRACT: The shrinkage phenomena in rectangular steel ingots is compared with such phenomena in round and square ingots produced by continuous casting. It is stated that shrinkage porosity is reduced to a minimum in rectangular ingots cast by the aforementioned method. Due to the particular conditions of liquid metal feed and solidification, central porosity in rectangular ingots is less pronounced than in round or square ingots. Shrinkage cavities are formed in the upper portion at a depth of 100 - 150 mm (900 - 1,000 mm in round and square ingots). Internal crack formation by direct cooling is reduced. It is concluded that the continuous casting method produces a finer crystalline struct-

Card 1/2

ure and a finer dispersed and uniform distribution of segregation elements. There are 5 microphotos, 1 graph, 1 table, 4 references, 2 of which are Soviet and 2 German.

LOPATYSHKIN, N.M., kand. tekhn. nauk; RUTES, V.S., kand.tekhn. nauk;
GURSKIY, G.V., inzh.

Investigating the quality of contimuously cast electrical steel [with summary in English]. Stal' 18 no.5:417-425 My '58. (MIRA 11:6)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii i Novo-Tul'skiy metallurgicheskiy zavod.
(Steel castings--Quality control)

RUTES, V.S.; NIKOLAYEV, N.A.; AKHTYRSKIY, V.I.

Formation of internal defects in square ingots in the continuous steel casting process. Stal' 20 no.3:212-215 Mr '60. (MIRA 13:6)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii i Ukrainskiy institut metallov.
(Steel ingots) (Continuous casting)

Rutes, V.S.

PHASE I BOOK EXPLOITATION SOV/4343

Soveshchaniye po teorii liteynykh protsessov, 3d

Usadochnyye protsessy v metallakh; trudy soveshchaniya (Shrinkage Processes in Metals; Transactions of the Third Conference on the Theory of Casting Processes) Moscow, AN SSSR, 1960. 281 p. Errata slip inserted. 3,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya.

Resp. Ed.: B.B. Gulyayev, Doctor of Technical Sciences, Professor; Ed. of Publishing House: V.S. Rzhevnikov; Tech. Ed.: T.V. Polyakova.

PURPOSE: This collection of articles is intended for scientific workers, engineers, technicians of scientific research institutes and industrial plants, and for faculty members of schools of higher education.

COVERAGE: The collection contains technical papers presented at the Third Conference on the Theory of Casting Processes, organized by Liteynaya sektsiya Komissii po tekhnologii mashinostroyeniya Instituta mashinovedeniya AN SSSR (Casting Section of the Commission for Machine-Building Technology of the Institute of Science of Machines, Academy of Sciences USSR) and by Institut metallurgii imeni Baykova AN SSSR (Institute of Metallurgy imeni A.A. Baykov, Academy of Sciences USSR). The most serious defects in castings, ingots, and welds as a result of metal shrinkage are reviewed. Factors contributing to the formation of shrinkage cavities, porosity, cracks, fissures, distortion, and internal stresses are analyzed along with measures taken to prevent and remedy them. The hydrodynamics of molten metals and the process of solidification of metals are discussed. Also presented are resolutions adopted at the Conference with regard to the problem of shrinkage in metals. No personalities are mentioned. Most papers are accompanied by bibliographic references, the majority of which are Soviet.

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78179
SOV/133-60-3-4/24

AUTHORS: Rutes, V S., Nikolayev, N. A., Akhtryskiy, V. I.

TITLE: Formation of Internal Defects in Square Cast Billets During Continuous Pouring of Steel

PERIODICAL: Stal', 1960, Nr , pp 212-215 (USSR)

ABSTRACT: This is an investigation of the effect of the rate of pouring, reduction, secondary cooling, and other factors on formation of internal defects in continuously poured square cast billets with the purpose of finding the causes of defects and methods for their elimination. This investigation was conducted at the Novotul'skiy Metallurgical Plant (NTMZ), with participation of plant personnel. The investigated cast billets were of 200 x 200 mm cross section. The depth of liquid cavity and the "front of crystallization" were determined by the methods of the Central Scientific Research Institute of Ferrous Metallurgy (TsNIIChM), that is, by pouring in the lead and introducing radioactive isotopes of sulphur and phosphorus. The relationship between the

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depth of liquid cavity (L,m) and the rate of pouring (v,m/min) for steels St 3, 45, U7-U13, SkHL1, and SkhL4 was determined as L= 9.5v, where 9.5= coefficient corresponding to the time of complete solidification of billets in min. Therefore, the depth of liquid cavity is increasing with the increase of pouring rate (see Fig. 1). The degree of development of axial porosity is increasing with the increase of pouring rate, which was noted in previous work. The development of axial porosity in continuous cast billets is attributed to the considerable length of liquid cavity in the narrow tail part, leading to the formation of "bridges," interfering with the correct feeding of metal to subsequent portions. The authors state that axial porosity was more developed in high carbon steels (U7-U13) than in low carbon steels (St3 and SkhL1) (see Fig. 3). The increase of pouring rate is followed by the increase of templets with coarse porosity, characterized by points 3 and 4 of TsNIIChM scale. 0 point indicates an absolute dense central zone and points 3 and 4 indicate

Formation of Internal Defects in Square Cast Billets During Continuous Pouring of Steel

78179
SOV/133-60-3-4/24

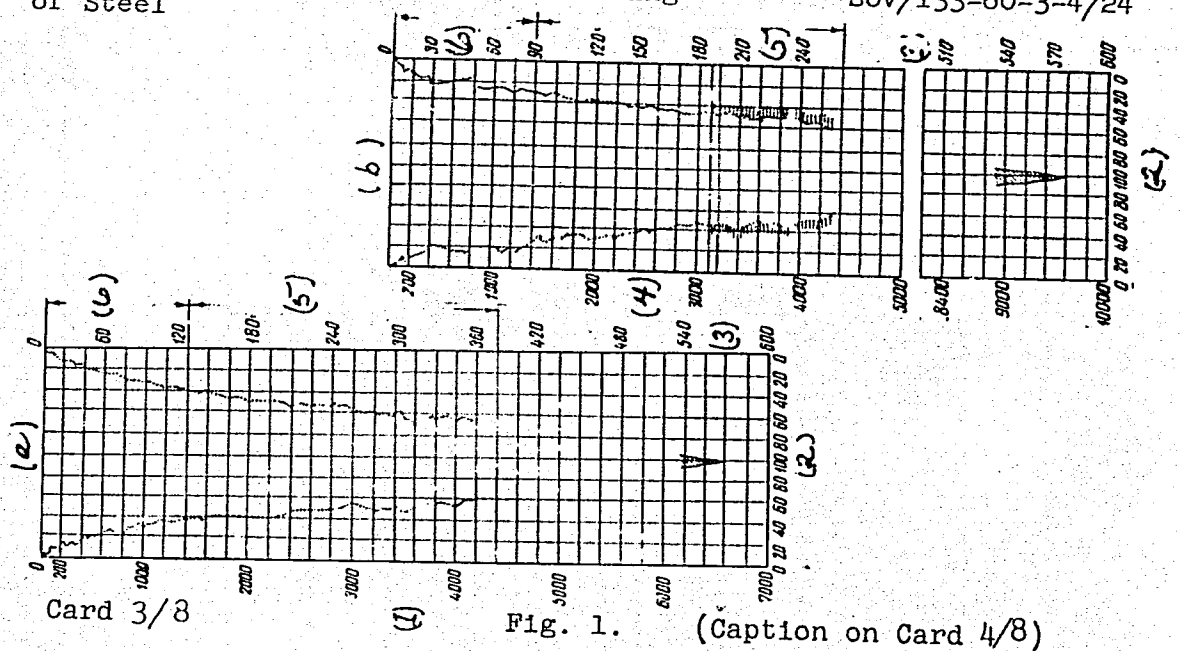

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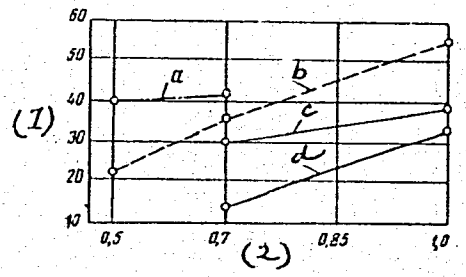
Fig. 1. (Caption on Card 4/8)

Fig. 1. The relationship between the depth of liquid cavity and the rate of pouring (a) when pouring at the rate of 0.7 m/min; (б) ditto at 1.0 m/min. (1) Distance from meniscus; (2) distance from surface, mm; (3) time, sec; (4) distance from meniscus of metal, mm; (5) in the zone of secondary cooling; (6) in crystallizer.



Card 4/8

Fig. 3. (Caption on Card 5/8)

Fig. 3. The effect of pouring rate on density of axial zone (number of templet points 3 and 4) of continuously cast billets of various steels: (a) U12-U13; (b) U7-U8; (c) St3; (d) SkhL1. (1) number of porous templets, %; (2) pouring rate, m/min.

porosity with voids larger than 1 mm. The internal zones of longitudinal and transverse templets often show some cracks. Depending on their location on cross section, these cracks (see Fig. 5) are divided into corner cracks (Fig. 5,a), intermediate cracks (Fig. 5,b) and spider-like central cracks (Fig. 5,c). The extent to which the billets are affected by segregation streaks and cracks in the intermediate zone are mainly determined by the amount of reduction produced by the rolls of pulling stands, when the core of billets is still liquid. The authors state that for improvement of quality of continuously cast billets the reduction of billets before their complete

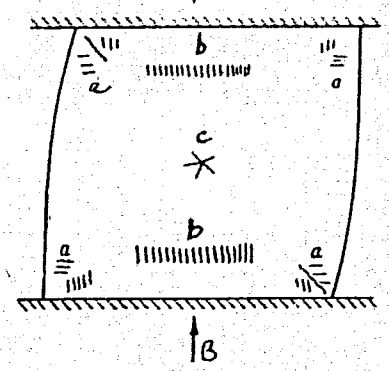


Fig. 5. A diagram of location of internal cracks and segregation streaks occurring in continuously cast billets. A-B, pulling rolls.

solidification should be eliminated. The distortion of shape begins in the crystallizer and continues until final solidification of the billet. Therefore, the authors recommend an improvement not only in the

design of crystallizers, but of the whole system below crystallizers. The authors feel that the mechanism of crack formation in the central zone requires further study. They studied the weldability of internal porosity and small cracks in continuously cast billets by hot deformation at different reductions. They state that full welding of internal intercrystalline hot cracks in investigated steels could be obtained only after 4 repeated reductions of the cast billets. However, for carbon tool steel U7-U13 even 4 consecutive reductions were not sufficient for complete welding of axial porosity, and only 8 consecutive reductions gave sufficient central density. There are 9 figures; and 4 references; 2 Soviet, 1 German and 1 French.

ASSOCIATION: TsNIIChM and Ukrainian Institute of Metals (TsNIIChM i Ukrayinskiy institut metallov)

Formation of Internal Defects in Square Cast Billets During Continuous Pouring of Steel

78179
SOV/133-60-3-4/24

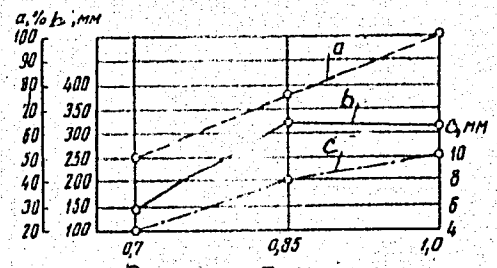


Fig. 7. The effect of pouring rate and reduction by pulling rolls on development of cracks and segregation streaks. (a) number of templets with cracks and streaks in %; (b) average summary length of cracks and streaks, mm; (c) difference in sides of castings (mm) resulting from reduction by pulling rolls.

Card 8/8

KUNIN, L.L.; RUTES, V.S.; CHIGRINOV, M.G.; BAKALOVA, L.M.

Interaction between protective atmospheres and liquid metal in ingot molds for continuous casting. Stal' 25 no.12:1088-1089 D '65. (MIRA 18:12)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii imeni I.P. Bardina.

FITILEV, B.V.; RUTES, V.S.

Widespread introduction of the continuous pouring of steel is a work of great economic significance. Stal' 23 no.9:769-772 S '63. (MIRA 16:10)

RUTES, V.S.; ZUBAREV, A.I.

Steel pouring and intermediate ladles in a continous steel-casting plant. Ogneupory 28 no.2:78-84 '63. (MIRA 16:2)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii (for Rutes). 2. Novolipetskiy metallurgicheskiy zavod (for Zubarev).
(Continuous casing--Equipment and supplies)
(Refractory materials)

BOJCENKO, M.S.; RUTES, V.S.

Continuous steel casting in the Soviet Union. Hut listy 12 no.6:500-509 Je '57.

RUTES, V.S.; NIKOLAYEV, N.A.; LEYTES, A.V.

Controlling the formation of longitudinal hot cracks on the surface of continuous ingots. Stal' 22 no.2:122-124 F '62. (MIRA 15:2)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii.

(Steel ingots--Defects)
(Continuous casting)

BOYCHENKO, Mikhail Stepanovich; RUTES, Viktor Savel'yevich; FUL'MAKHT, Veniamin Veniaminovich; TIMOSHENKO, N.N., red.; POZDNYAKOVA, G.L., red. izd-va; KARASEV, A.I., tekhn. red.

[Continous casting of steel] Nepreryvnaia razlivka stali. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 301 p. (MIRA 14:10)

(Continuous casting)

AFANAS'YEV, S.G., kand.tekhn.nauk; BARSKIY, B.S., dotsent; YEFROYMOVICH, Yu.Ye., kand.tekhn.nauk; KAGANOV, V.Yu., kand.tekhn.nauk; KATOMIN, B.N., inzh.; LEYKIN, V.Ye., inzh.; LUR'YE, I.N., inzh.; MIKHAYLOV, O.A., kand.tekhn.nauk; METESIN, A.Ye., inzh.; ORMAN, M.Ye., inzh.; RUTES, V.S., kand.tekhn.nauk; SHNEYEROV, Ya.A., kand.tekhn.nauk; OYKS, G.N., prof., doktor tekhn.nauk, nauchnyy red.; GOL'DIN, Ya.A., glavnyy red.; PTITSYNA, V.I., red.izd-va; ISLENT'YEVA, P.G., tekhn.red.

[Technological progress in Soviet ferrous metallurgy; steelmaking] Tekhnicheskii progress v chernoi metallurgii SSSR; staleplavil'noe proizvodstvo. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 493 p. (MIRA 14:4)

(Steel--Metallurgy)

RUTES, V.S., kand.tekhn.nauk; KATOMIN, B.N., inzh.; KAN, Yu.Ye., inzh.; PETROV, V.K., inzh.; LOBANOV, V.V., inzh.

Mastering the process of continuous casting of carbon steel at the Novyy Lipetsk Metallurgical Plant. Stal' 21 no. 4:311-317 Ap '61. (MIRA 14:4)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii i Novolipetskiy metallurgicheskiy zavod.
(Novyy Lipetsk—Continuous casting)

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A054/A127

18.3200

AUTHORS: Rutes, V. S., Candidate of Technical Sciences; Katomin, B. N., Engineer; Kan, Yu. Ye., Engineer; Petrov, V. K., Engineer, and Lobanov, V. V., Engineer

TITLE: Adopting the process of the continuous casting of carbon steel at the Novo-Lipetsk metallurgicheskiy zavod (Novo-Lipetsk Metallurgical Plant)

PERIODICAL: Stal', no. 4, 1961, 311 - 317

TEXT: Two units for continuous casting of carbon steel have been in operation in the Novo-Lipetsk Metallurgical Plant since 1959 and 1960, respectively. The units used for casting 150 x 620, 150 x 770 and 170 x 1020 mm slabs are arranged vertically (TsNIIChM-design), the pits are 16.5 m deep, while the 90-ton ladle is mounted 9 m above the workshop floor. Metal is poured into the crystallizer via a 5 - 7-ton intermittent ladle. The unit consists of two independent machines, each containing a crystallizer, secondary system, pulling stands, gas cutters, discharge devices (Fig. 1). The intermittent ladle is provided with spouts, (28 - 30 mm in diameter),

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Adopting the process of the continuous casting...

in accordance with the composition of the steel. The crystallizer consists of double-sheet walls, 1.5 m long, the inner sheet is made of chromium-bronze (БрХр0.6 = BrKhr0.6), the outer of steel. Cooling water is supplied at a rate of 150 - 250 cu m/h to flow between the sheets. The crystallizer reciprocates vertically over 20 mm (downward) by means of a roller-system, synchronously with the slab, while its upward motion is 3-times faster than that of the slab. The inoculator (9 m long) has a special groove on its upper part (in the crystallizer), ensuring strong bond with the slab. The cooling device, 6.5 m long, is provided with frames, connected with 120-mm diameter rolls. The frames can be adjusted to the slab size. The cooling area is divided into 3 zones, the water flow can be independently controlled on each side and for each zone. Water consumption as a function of slab section-size and type of metal varies between 30 and 75 cu m/h. The slabs are removed from the crystallizer by pulling equipment consisting of four 300-mm diameter guiding beams, which are pressed to the slabs by means of a hydraulic system (40 - 60 atmospheres). Immediately after discharging the slabs are cut to pieces 6 - 8 m long, by 2 oxy-acetylene cutters with 3-m stroke. The equipment is completed with a roll-over machine and conveying

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Adopting the process of the continuous casting...

facilities. As this was the first continuous casting machine of such large size, literature gave no indications as to its operation. In the beginning 150 x 620 mm slabs were cast and in the first month not one out of 12 ladles could be poured completely, while in the second month out of 18 ladles 6 could be poured. Operation had to be interrupted mostly due to the troubles with the intermittent ladle, some other parts of the equipment and the deformation of slabs observed under the discharge device. This drawback could be eliminated by improving secondary cooling conditions. Also the faulty operation of the spouts, rupture of the plugs could be eliminated. A frequent cause of trouble was the tendency of the metal to break through under the crystallizer, mainly by the slag inclusions which are difficult to remove from the narrow side of slabs. The crystallizer operation was often affected by water-leakage through the sheets, due to their burning out. The greater the slabs, the simpler and easier the casting process. Since November 1959, 170 x 1020 mm slabs have been produced from killed carbon steel. The amount of faulty castings was reduced from 30.4% to 2.9% in 8 months. The temperature of the liquid metal in the 90-ton ladle was tested in the 1580° - 1640°C range. The optimum temperatures are 1600° - 1630°C. Below 1600°C there is the risk of the metal clogging the spouts of the inter-

Adopting the process of the continuous casting...

mittent ladle, whereas above 1630°C rupture of the metal under the crystallizer and longitudinal fractures on the broad sides of the slab can be expected. The optimum pouring speed for 150 x 620 mm (A) slabs was 0.85 - 0.90 m/min, for 150 x 770 mm (B) slabs: 0.75 - 0.80 m/min and for 170 x 1020 mm (C) slabs: 0.50 - 0.60 m/min. The metal consumption - in the same sequence - was: A: 550 - 610 kg/min, B: 690 - 740 and C: 700 - 850 kg/min. When pouring under the lowest rate, the spouts of the intermittend ladle tend to get clogged and due to the longer pouring time, the operation of the ladle-stoppers was affected. An increase of the pouring rate above the maximum (0.90 m/min) may result in rupture of the metal under the crystallizer. For cooling water consumption (in the crystallizer) the following values were found (in [illegible] m/h): slabs A: 150 - 200; slabs B: 195 - 210; slabs C: 225 - 250. Water consumption for secondary cooling, (in cu m/h): slabs A: 31 - 34, slabs B: 37.5 - 41, slabs C: 44 - 52. Heat dissipation, (10^6 cal/h): slabs A: 1.7; slabs B: 1.9; slabs C: 2.0. In the early operation of the equipment waste was considerable: in November 1959 26.4%. The main defects are longitudinal cracks, leaks, beads, slag inclusions, etc. Longitudinal surface cracks appeared frequently which could be prevented by pouring the

Card 4/[illegible]

Adopting the process of the continuous casting...

metal into the crystallizer excentrically, at 250 mm from the thin wall of the crystallizer and by applying the optimum sulfur and carbon content of the metal. At a carbon content of 0.14% and a sulfur content below 0.028% no cracks formed; at 0.17% carbon content the allowed sulfur content is 0.020%. The other types of defects could be eliminated by improving the operation of the intermittent ladle, stoppers, etc. Bead formation was prevented by maintaining the required level of the metal in the crystallizer; by reducing the coating of the intermittent ladle and improving the removal of slag the amount of slag inclusions were reduced. In March 1960, the rate of flawless 170 x 1020 mm slabs from killed carbon steel was as high as 94 - 96%, the maximum waste: 1.9%. The slabs were rolled into 2.5 - 3.0 mm and 10 - 25 mm sheets and it was found that sheets of cast slabs have the same plasticity and surface-quality as those made of rolled slabs. Mechanical properties, microstructure and macrostructure of the cast slabs meet the standard requirements. There are 4 figures and 2 tables.

ASSOCIATION: TsNIICHM and Novo-Lipetskiy metallurgicheskiy zavod (Novo-Lipetsk Metallurgical Plant)

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RUTES V.S.

PHASE I BOOK EXPLOITATION SOV/5407

Afanas'yev, S.G., Candidate of Technical Sciences; B.S. Barskiy, Docent; Yu.Ye. Yefroymovich, Candidate of Technical Sciences; V.Yu. Kaganov, Candidate of Technical Sciences; B.N. Katonin, Engineer; V.Ye. Leykin, Engineer; I.N. Lur'ye, Engineer; O.A. Mikhaylov, Candidate of Technical Sciences; A.Ye. Ketosin, Engineer; M.Ye. Orman, Engineer; V.S. Rutes, Candidate of Technical Sciences; and Ye.A. Shneyerov, Candidate of Technical Sciences.

Tekhnicheskiy progress v chernoy metallurgii SSSR; staleplavil'noye proizvodstvo (Technological Progress in Soviet Ferrous Metallurgy; Steelmaking Industry) Moscow, Metallurgizdat, 1961. 495 p. Errata slip inserted. 3,200 copies printed.

Sponsoring Agencies: Gosudarstvennyy nauchno-tekhnicheskiy komitet Soveta Ministrov SSSR. Tsentral'nyy institut informatsii chernoy metallurgii.

Ed. and Scientific Ed.: G.N. Oyks, Professor, Doctor of Technical Sciences; Director of the Central Institute for Information on Ferrous Metallurgy: K.B. Arutyunov; Chief Ed.: Ya.A. Gol'din; Ed. of the Central Institute for Information on Ferrous Metallurgy: L.I. Khoras; Ed. of Publishing House: V.I. Ptitsyna; Tech. Ed.: P.G. Islent'yeva.

~~Card 1/~~

8

Technological Progress (Cont.) SOV/5407

PURPOSE: This book is intended for technical and scientific personnel in the metallurgical and machine industries, and may also be used as a textbook by students in schools of higher education and tekhnikums.

COVERAGE: A review is made of the basic stages in the development of open-hearth, electric-hearth, electric-furnace, and converter steelmaking processes in the USSR. The present status of ferrous metallurgy and prospects for the future are examined. Present trends in the design, automation, and mechanization of steelmaking equipment are given. The state of the organization and mechanization of repairs in steelmaking plants, and methods of equipment maintenance are described. Problems in the process of steelmaking (the use of oxygen and vacuum, processing of phosphorus irons, improvement of the manufacture of individual types of steel, and steel casting) are discussed at length. No personalities are mentioned. There are 529 references: 317 Soviet, 9 English, 2 German, and 1 French.

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STEEL MANUFACTURE IN OPEN-HEARTH FURNACES

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V.S. RUTES

Nepreryvnaya Razlivka Stali by M.S. Boychenko, V.S. Rutes (1) N.A. Nikolayev. Moskva, Izd-Vo Akademiya Nauk SSSR, 1956.

50 (1) p. Illus., Diagrs., Tables.

(Akademiya Nauk SSSR. Nauchno-Populyarnaya Seriya)

Bibliography: p. (51)

KOMPAN, Ye.G.; RUTGAYZER, I.D.; TKACHENKO, V.A., otv. za vypusk; LYSENKO, I.F., red.; CHERNYSHENKO, Ya.T., tekhn. red.

[Use of plastic materials in the machinery manufacture; list of literature (for inventors, efficiency promoters, and innovators of the industry)] Primenenie plastmass v mashinostroenii; katalog literatury (v pomoshch' izobretateliam, ratsionalizatoram i novatoram proizvodstva). Khar'kov, Izd-vo TsBTI Khar'kovskogo SNKh, 1960. 55 p. (MIRA 16:7)

1. Khar'kov. TSentral'naya nauchno-tekhnicheskaya biblioteka. (Plastics) (Machinery industry)

RUTGAYZER, V.

Falsifying the purposes of capitalist and socialist production.
Vop. ekon. no.10:118-125 O '61. (MIRA 14:10)
(Russia--Economic conditions)
(United States--Economic conditions)

RUTGAYZER, V.D.

KOHONENKO, K.I.; RUTGAYZER, V.D.

Detector characteristics method for studying gaseous discharge plasma. Uch.zap. KHGU 64 no.6:199-202 '55. (MLRA 10:7)
(Electric discharges through gases)

RUTGAYZER, V.D.; KONONENKO, K.I.

Ionic resonance in plasma and its application. Uch.zap. KHGU 64 no.6:203-206 '55. (MIRA 10:7)
(Electric discharges through gases)

Rutgayzer, V.D.

"Ionic Resonance in Plasma and Its Application," by V. D. Rutgayzer and K. I. Kononenko, Uch. Zap. Kharkovsk. Un-ta, 1955, 64, pp 203-206 (from Referativnyy Zhurnal -- Fizika, No 1, Jan 57, Abstract No 1712)

The determination of the density value of ions by means of detecting or statistical methods leads to divergencies (RZhFiz, 1956, 29192). A new method by means of ionic resonance is suggested. The proper frequency of free ionic oscillations is related to density by the expression

$$\omega = \sqrt{\frac{4\pi e^2 N}{M}}$$

and is determined from the resonance frequency appearing on removal of the detector characteristic as a function of the specified frequency. (U)

Sum IN 1451

RUTGAYZER, V. D.

Category : USSR/Electronics - Gas Discharge and Gas-Discharge Instruments H-7

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 1712

Author : Rutgayzer, V.D., Kononenko, K.I.
Title : Ionic Resonance in Plasma and its Application

Orig Pub : Uch. zap. Khar'kovsk. un-ta, 1955, 64, 203-206

Abstract : Considerable discrepancies are found when the ion density in plasma is determined by the detector and static characteristics method (Referat. Zh. Fizika, 1956, 29192). A method is therefore proposed to determine the density with the aid of ionic resonance. The natural frequency of the free ion oscillations, which is related to the density by the equation $\omega = \sqrt{\frac{4\pi e^2 N}{M}}$ is determined from the resonant frequency, which is found when the detector characteristic is plotted as a function of the applied frequency. The various methods used to determine the ion density and the electron density of plasma are compared, and it is indicated that the resonance-detection method is the most accurate.

Card : 1/1

RUTGAYZER, V.D.: KONENKO,K.I.

"Study of Gas Discharge Plasma by the Detector Characteristics Method," by K. I. Kononenko and V. D. Rutgayzer. Uch. Zap. Khar'kovsk Un-ta (Scientific Notes of Kharkov University), 1955, 64, pp 199-202 (from Referativnyy Zhurnal -- Fizika, No 10, Oct 56, Abstract No 29192)

Plasma parameters were measured simultaneously by means of a probe, following the method of detector characteristics suggested by Kononenko (see preceding abstract) and by usual method of Langmuir and Mott-Smith. The measurements were carried out by tubes filled with neon at pressures of 0.1 and 1 mm Hg or filled by vapors. Detector characteristics at various frequencies appeared to be identical. The measurements satisfied the "law of square detecting," because the amplitude of the alternating current was chosen sufficiently small. Discrepancies between measurement results using detector or statical characteristics for determining the space potential did not exceed 9%, the electron temperature not over 1.6% and the electron density not over 26-68%. The greatest advantage of the detector characteristics consists in the possibility of obtaining easily the distribution function of electron velocities. In the Hg plasma at a 160 ma current the electron distribution was close to Maxwellian while at 10 ma a sharp deviation from Maxwellian distribution was noticed.

SUM. 1287

RUTGAYZER, V. D., GERBER, L. M., and GOL'DIN, M. L.

"Gamma-Relay for Small Drops in the Intensity of Radiation"

paper presented at the All-Union Seminar on the Application of Radioactive Isotopes in Measurements and Instrument Building, Frunze (Kirgiz SSR), June 1961)

So: Atomnaya Energiya, Vol 11, No 5, Nov 61, pp 468-470

GALL', L.N.; GALL', R.N.; RUTGAYZER, Yu.S.; SHERESHEVSKIY, A.M.

Three-band ion sources. Zhur.tekh. fiz. 32 no.2:202-207 F '62.
(MIRA 15:2)

(Ion sources)

3/057/62/032/002/011/022
B124/B102

24.6210

AUTHORS: Gall', L. N., Gall', R. N., Rutgayzer, Yu. S., and Sheresh-evskiy, A. M.

TITLE: Three-tape ion source

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 2, 1962, 202 - 207

TEXT: The industrially produced tape sources for the mass spectrometers of type MI1303 (MI1303) and MI1305 (MI1305) display considerable shortcoming. Therefore a new, improved ion source with surface ionization and separate evaporation and ionization curves has been developed. The arrangement of the tapes shown in Fig. 2 was found to be optimum to obtain focused ion beams with a cross-sectional area of 0.2·10 mm. The ions emitted from the ionizator tape are focused onto the exit slot. The luminosity of the ion-optical system of the source, i. e., the ratio of the number of ions emitted from the source as a focused beam to the total number of ions formed on the ionizator, was measured in a chamber evacuated to $5 \cdot 10^{-7}$ mm Hg, which contained an ion collector with an electrometric amplifier used to determine the ion current. An aqueous suspension of ground mica providing an ion current

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Three-tape ion ...

stable in time at 900 - 1200°C was applied to the ionizator surface. The ion current was measured using electrode potentials corresponding to maximum values of ion flux to the collector. The total number of ions formed on the ionizator per unit time was determined by two different methods. The similar results obtained indicate that there occur no secondary processes and that the mean luminosity of the system is about 20%. A time of 3 - 5 min is needed to exchange all tapes and to introduce the sample. Long-time operation of the ionizator at 2800°K without substantial increase in pressure and without electric breakdown is ensured. The resolution of a mass spectrometer with such a three-tape ion source is 2000 for $R_{0.5}$, and 800 for $R_{0.05}$. The utilization coefficient of the sample, i. e., the ratio of the number of ions recorded by the collector with complete evaporation of the sample to the number of atoms introduced into the ion source, varies from 1.0 to 2.5. The sensitivity to uranium of an MI1306 (MI1306) mass spectrometer with a three-tape ion source is about 10^{-12}g. N. I. Ionov(Ref. 1: ZhTF, 18, 174, 1948), S. A. Shchukarev and G. A. Semenov(Ref. 3: ZhNKh, 11, no. 6, 1217, 1957), R. N. Ivanov and G. M. Kukavadze(Ref. 4: PTE, 1, 106, 1957) and V. K. Gorshkov (Ref. 5: PTE, 2, 53, 1957) are mentioned. V. K. Oleynik and G.

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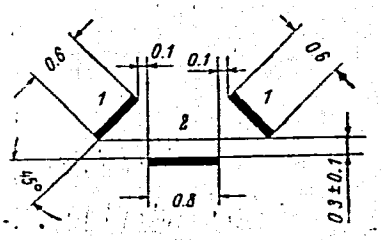
Three-tape ion ...

A. Semenov are thanked. There are 5 figures, 2 tables, and 6 references: 4 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: M. Inghram, R. Chupka, Rev. Sci. Instr. 24, 518, 1953; G. Palmer, J. Nucl. Energy 7, 1-12, 1958.

SUBMITTED: November 21, 1960 (initially)
February 6, 1961 (after revision)

Fig. 2. Schematic diagram of the arrangement of tapes in the three-tape ion source. (1) evaporator; (2) ionizator.



Card 3/4

OLEYNIK, V.K.; RUIGAYZER, Yu.S.; SHERESHEVSKIY, A.M.

Unified train of ion sources for mass-spectrometers. Prib. tekh. eksp. 10 no.1:141-146 Ja-F '65. (MIRA 18:7)

1. Spetsial'noye konstruktroskoye byuro analiticheskogo priborostroyeniya AN SSSR.

L 47031-65 EWT(1) IJP(c)

ACCESSION NR: AP5007044 S/0120/65/000/001/0141/0146

AUTHOR: Oleynik, V. K.; Rutgayzer, Yu. S.; Shereshevskiy, A. M.

TITLE: Standardized line of ion sources for mass spectrometers

SOURCE: Pribory i tekhnika eksperimenta, no. 1, 1965, 141-146

TOPIC TAGS: ion source, mass spectrometer

ABSTRACT: As A. O. Nier's widely-used ion source often does not meet modern requirements, a new line of five standardized types has been developed: (1) A gas ion source with an electrostatic focusing of the electron beam; (2) Same, with magnetic focusing; (3) A crucible-type ion source; (4) A furnace type with a cell; (5) An ion source intended for analyzing heavy hydrocarbons with stabilized temperature of the admission channel and ionization chamber. This line is intended for MI1309, MI1310, MI1311, and MKh1306 Soviet-made mass spectrometers. The resolving power of these spectrometers equipped with the

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L 47061-65

ACCESSION NR: AP5007044

above ion sources is within 300—1000, depending on the size of the source output slit and the collector input slit. The argon sensitivity of these mass-spectrometers is within 2×10^{-4}—$5 \cdot 10^{-5}$ %. The design of standardized sources permits easy replacements to suit operating conditions. The sources are intended for isotopic and molecular analyses of solids, liquids, and gases. Orig. art. has: 6 figures.

ASSOCIATION: SKB Analiticheskogo priborostroyeniya AN SSSR (Special Design Office for Analytical Instruments, AN SSSR)

SUBMITTED: 30Nov63 ENCL: 00 SUB CODE: GP, IE

NO REF SOV: 004 OTHER: 004

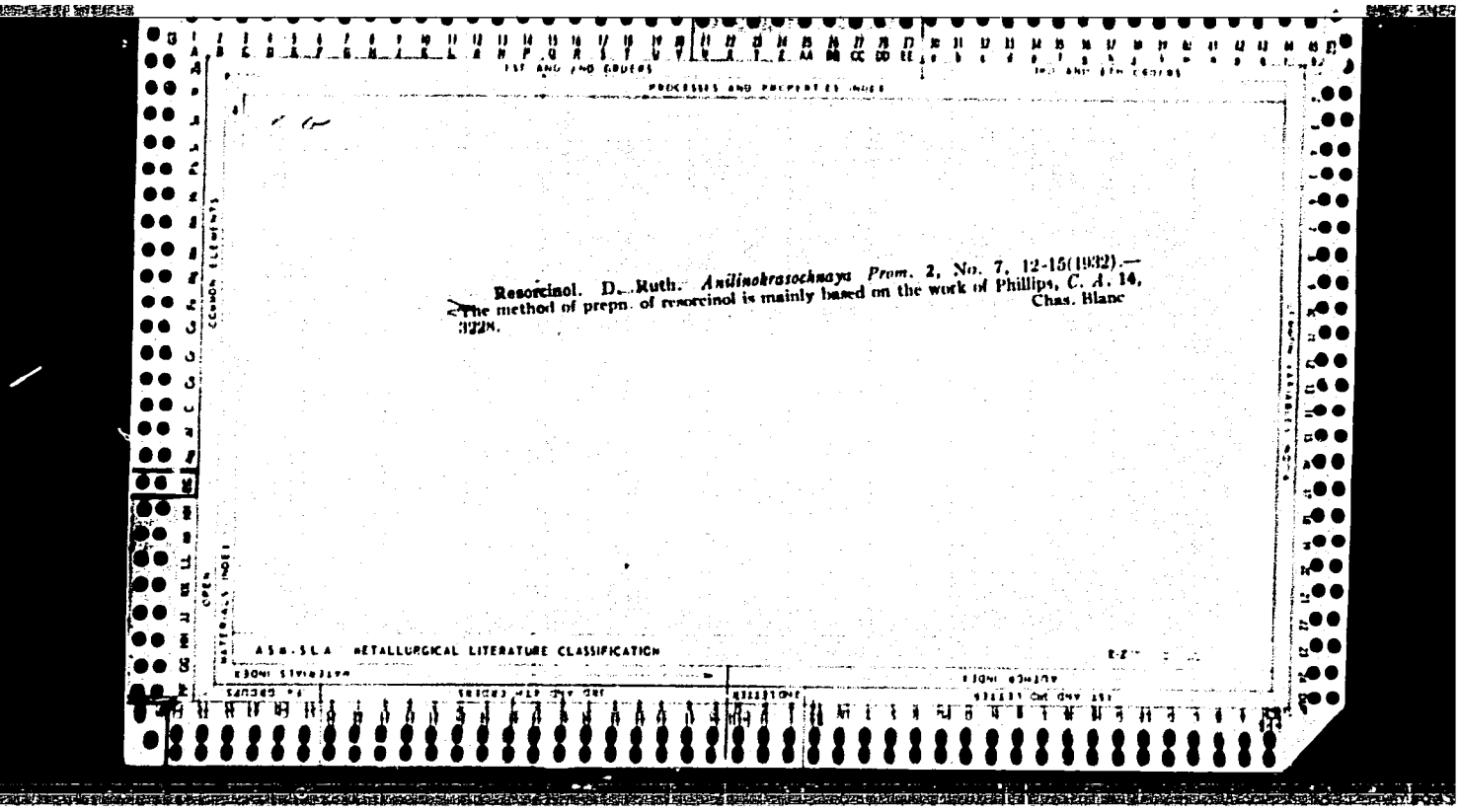
Card 2/2

PSHENICHNIKOV, S., kand. tekhn. nauk; LAPININ, A., inzh.; RUTGERS, P., inzh.

Investigating reinforced concrete span structures with waterproof joints assembled by sections. Avt. dor. no.10:28-29 O '64. (MIRA 17:12)

LAPININ, A.F., inzh.; RUTGERS, P.V., inzh.

Investigating reinforced concrete spans made of composite beams. (MIRA 15 9)
Avt.dor. 25 no.9:19-20 S '62.
(Bridges, Concrete)



Resorcinol. D. Ruth. *Anilinokrasochnaya Prom.* 2, No. 7, 12-15(1932).—
The method of prepn. of resorcinol is mainly based on the work of Phillips, *C. A.* 16, 3228. Chas. Blanc

RUTH, Lillie, Dr.; POMPILIAN, V., dr.

Angiospastic disorders in workers in a plant for manufacturing and reconditioning of files. Rev. igiena microb. epidem., Bucur. Vol. 4:79-83 Oct-Dec 55.

1. Institutul de igiena muncii si boli profesionale.

(OCCUPATIONAL DISEASES
angiospastic disord. in workers making & reconditioning files, relation to vibration inj.
(VIBRATIONS, inj. eff.
angiospastic disord. in workers making & reconditioning files.
(BLOOD VESSELS, dis.
(SAME)
(SPASM
(SAME)

POLAND / General Problems of Pathology. Tumors. Human Neoplasm U-4

Abs Jour : Ref Zhur - Biol., No 20, 1958, No 94036

Author : Komorowska, Alina; Linecka, Janina; Ruth-Mazurkiewicz, Maria.
Inst : Not given
Title : Cancer of the Cervix of the Uterus in a Nine-Month-Old Girl.

Orig Pub : Ginekol. polska, 1957, 28, No. 5, 539-544

Abstract : A case of cancer of the cervix of the uterus is described in a girl nine months old. The primary symptom was a profuse bloody discharge for three weeks. Examination of the patient revealed an enlarged uterus the size of a walnut (on rectal examination). Histological examination of smears taken from the uterine cavity showed the presence of cells of adenocarcinoma. The mother refused permission to operate, but after 3 months the child was again admitted to the hospital. On laparotomy a tumor the size of an orange was

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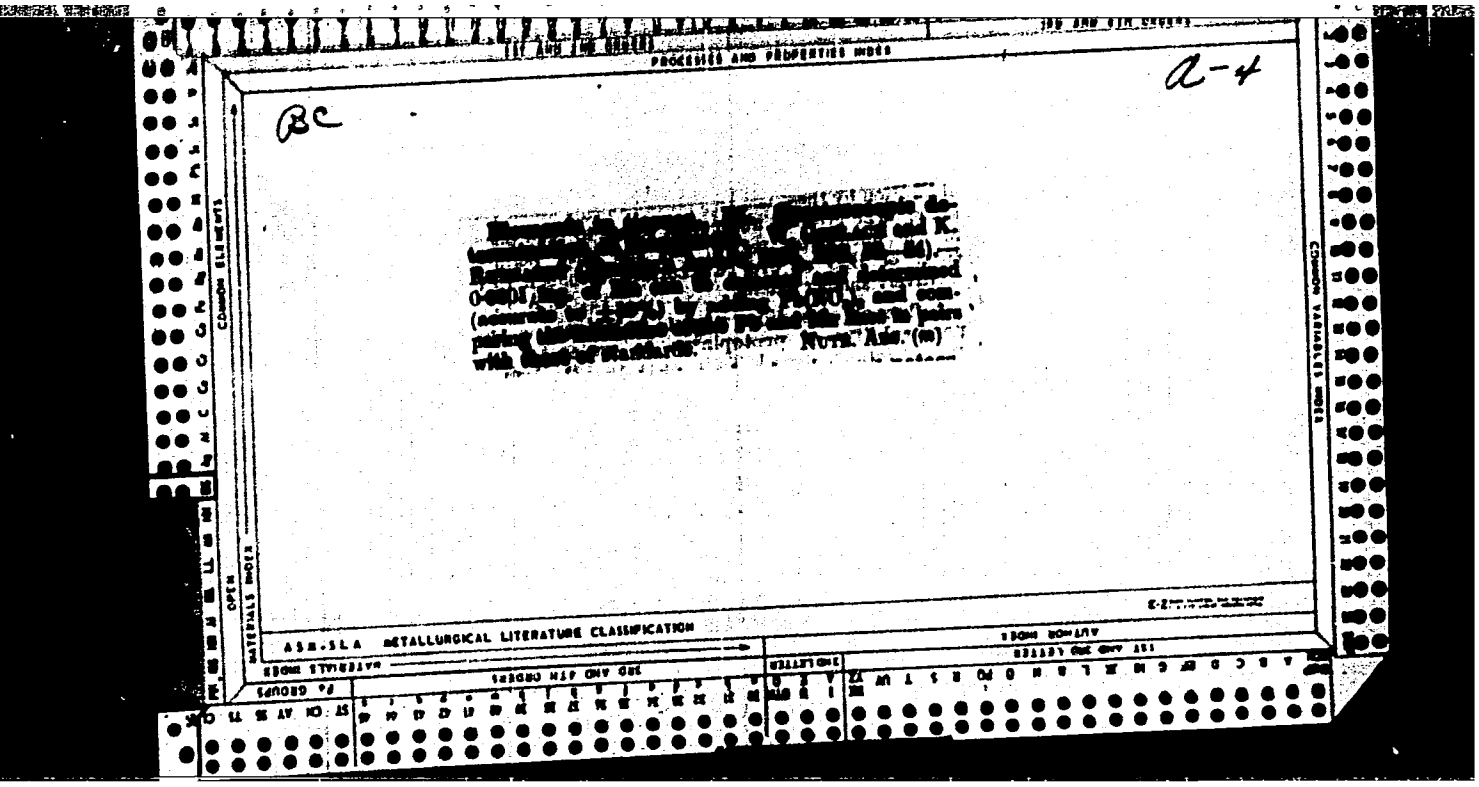

RUTHEISER, M.A.,
G. P. SAKHAROV, Klin. Med. 15, 539-47 (1937)

CZECHOSLOVAKIA / WEST GERMANY

RUTHER, E.; ACKENHEIL, M.; MATUSSEK, N.; Biochemical Department, German Research Institute of Psychiatry (Biochemie, Deutsche Forschungsanstalt fur Psychiatrie), Munchen.

"Amine Metabolism in CNS After a Stress Situation."

Prague, Activitas Nervosa Superior, Vol 8, No 4, Nov 66, pp 416 - 417

Abstract: The effects of administration of reserpine were compared to the effects of noradrenalin and serotonin. Experiments were conducted on rats. The syndrome of physiological exhaustion may be used for the investigation of the mechanism causing reduced activity in cases of depression. 1 Figure, 7 Western references. Submitted at the 8th Annual Psychopharmacological Meeting at Jesenik, 18 - 22 Jan 66. Article is in English.

1/1

KOMOROWSKA, Alina; LINIECKA, Janina; RUTH-MAZURKIEWICZ, Maria

Cancer of the uterine cervix in a 9 month-old girl. Gin. polska 28 no.5:539-544 Sept-Oct 57.

1. Z I Kliniki Chorob Kobiecych i Poloznictwa A. M. w Lodzi. Kierownik: prof. dr J. Sieroszewski i z Kliniki Chirurgii Dziecicej A. M. w Lodzi. Kierownik: prof. dr A. Maciejewski. Adres: Lodz, Pl. Dabrowskiego 4.

(CERVIX NEOPLASMS, in inf. & child
case report (Pol))

RUTICKA, Jaroslav; AMBROZ, Jaroslav

Lesions of the upper respiratory tract in workers engaged in the production of nitrogen fertilizers. Pracovni lek. 11 no.8:414-418 Oct 59.

1. Oddeleni chorob z povolani KUNZ v Ostrave, ved. lekar MUDr. J. Rosmanith ORL poliklinika ZUNZ VZKG v Ostrave VII, prednosta MUDr. L. Havlicek.
(FERTILIZERS, toxicol.) (NITROGEN, toxicol.)
(RESPIRATORY SYSTEM, dis.)

NAUR, Peter; BACKUS, J.W.; BAUER, L.F.; GREEN, J.; KATZ, C.; McCARTHY, J.; PERLIS, A.J.; RUTISHAUSER, H.; SAMELSON, K.; VAUQUOIS, B.; WEGSTEIN, J.H.; WIJNGAARDEN, A., van; WOODGER, M.; REVESZ, Gyorgy [translator]

Report on the algorithmic language ALGOL 60. Mat kut kozl MTA 6 Series B no.4:425-465 '61.

1. ALGOL-bizottsag tagjai (for Backus, Bauer, Green, Katz, McCarthy, Perlis, Rutishauser, Samelson, Vauquois, Wegstein, Wijngaarden, Woodger). 2. Szerkeszto "Communications of the ACM" (for Naur). 3. Magyar Tudomanyos Akademia Szamitastechnikai Kozpont (for Revesz).

Some approximate methods of solving ...

$$P'(x_0)x = P'(x_0)x_0 - P(x_0)$$

are connected by the relation

$$\|V(x_0) - \tilde{x}\| \leq q \|x_0 - \tilde{x}\| \qquad (11)$$

with $0 < q < 1$.

Theorem 1 : Let the initial approximation x_0 satisfy the conditions :

1) There exists $\Gamma_0 = [P'(x_0)]^{-1}$ and $\|\Gamma_0\| \leq B_0$.

2) $\|\Gamma_0 P(x_0)\| \leq \eta_0$.

3) It holds

$$h_0 = B_0 k \eta_0^{\alpha} \leq \frac{\beta(q)}{(1+q)^{\alpha}} , \qquad (12)$$

where $\beta(q)$ is the root of

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Some approximate methods of solving ...

$$\frac{1}{(1-\beta)^{1+\alpha}}\left(q+\frac{\beta(1+q)}{1+\alpha}\right)^{\alpha}=1 \qquad (13)$$

4) The sphere S_o : $\|x-x_o\| \leq \frac{1+q}{1-\gamma}\eta_o$, where $\gamma = (1-\beta(q))^{1/\alpha}$, is contained in Ω.
Then in S_o there lies a solution x^* of (1) to which the successive approximations (5) are converging. If (12) is a rigorous inequality then it holds

$$\|x_n - x^*\| \leq (q+\varepsilon_n)\|x_{n-1} - x^*\|$$

where $\varepsilon_n \to 0$.
If $\Gamma(x)$ does not only exist in x_o but in a certain neighborhood S of x_o and if $\|\Gamma(x)\| \leq B(x \in S)$ then the conditions of theorem 1 can be weakened. Let $h_o = Bk\eta_o^{\alpha}$, $d_o = \frac{1+q}{1+\alpha}^{1+\alpha} h_o + q$ and furthermore :

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Some approximate methods of solving ...

$\eta_n = d_{n-1}\eta_{n-1}$, $h_n = Bk\eta_n^{\alpha}$, $d_n = \frac{1+q^{1+\alpha}}{1+\alpha} \cdot h_n + q$. Let $d_o < 1$ and D be the sum of $1 + d_o + d_o d_1 + d_o d_1 d_2 + \ldots$.

Theorem 2 : Let

$$h_o = Bk\eta_o^{\alpha} < \frac{1-q}{1+q^{1+\alpha}}(1+\alpha) \quad (14)$$

Let the sphere $S_o : \|x - x_o\| \leq (1+q) D\eta_o$ lie in S. Then in S_o there exists a solution x^* of (1) to which (5) is converging. Reducing the solution of (1) in every step to the solution of

$$P'(x_o)(x - x_{n-1}) + P(x_{n-1}) = 0$$

and using V then one obtains the method

$$x_n = V(x_{n-1}; P'(x_o), P'(x_o)x_{n-1} - P(x_{n-1})) , \quad (15)$$

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Some approximate methods of solving ...

Theorem 3 : Under the assumptions of theorem 1 let

$$h_0 = B_0 k \eta_0^{\alpha} < \frac{(1-q)^{1+\alpha}}{1+q} \left(\frac{\alpha}{1+\alpha} \right)^{\alpha} .$$

Let the sphere S_0 : $\| x - x_0 \| \leq N \eta_0$, where N is the smallest root of

$$\frac{1+q}{1+\alpha} h_0 N^{1+\alpha} - (1-q)N + 1 = 0$$

lie in Ω . Then the successive approximations (15) converge to the solution x^* of (1). It holds

$$\| x_n - x^* \| \leq q_1 \| x_{n-1} - x^* \|$$

where $q_1 = (1+q) h_0 N^{\alpha} + q$.

Theorem 4 : Let the successive approximations of the solution x^* of (1) be determined according to the formulas

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Some approximate methods of solving ...

$$x_n = V(x_{n-1};\ P'(x_0),\ P'(x_0)x_{n-1} - P(x_{n-1})) + h_n \quad , \tag{16}$$

where h_n -- random vector; $\| h_n \| < \delta$ $(n=1,2,\ldots)$. Let

$$h_0 \equiv B_0 k \eta_0^{\alpha} < \frac{(1-q)^{1+\alpha}}{1+q} \cdot \frac{\left(\frac{\alpha}{1+\alpha}\right)^{\alpha}}{(1+\delta)^{\alpha}} \quad .$$

Let the condition (11) be satisfied in the sphere $\| x-x_0 \| < N_1 \eta_0$, where N_1 is the smallest root of

$$\frac{1+q}{1+\alpha} h_0 N^{1+\alpha} - (1-q)N + 1 + \delta = 0 \quad .$$

Then for the successive approximations (16) there holds the relation

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Some approximate methods of solving ...

$$\overline{\lim_{n\to\infty}} \| x_n - x^* \| \leq \frac{\overline{\lim_{n\to\infty}} \| h_n \|}{1 - q_1}$$

where $q_1 = (1 + q)h_o N^{\alpha} + q$.

The authors mention Kantorovich, S.G. Kreyn, V.M. Fridman, B.A. Vertgeym and I.P. Mysovskikh. There are 6 Soviet-bloc references.

PRESENTED: July 13, 1961, by I.N. Vekua, Academician

SUBMITTED: July 12, 1961

Card 8/8

RUTITSKIY, Ya.B.

One property of the Orlicz norm. Dokl.AN SSSR 138 no.1:56-58 My-Je '61. (MIRA 14:4)

1. Voronezhskiy inzhenerno-stroitel'nyy institut. Predstavleno akademikom V.I.Smirnovym.

(Spaces, Generalized) (Functions, Theory of)

MOSONYI, L., prof.; SZILAGYI, G.; TOTH, B.; BALAZS, Marta; RUTKAI, P.

Pathogenesis of "endocrine" peptic ulcer. Acta med. acad. sci. Hung. 21 no.1:51-57 '65.

1. Fourth Department of Medicine (Chief: Prof. L. Mosonyi) Postgraduate Medical School and Department of Physiology (Director: Prof. A. Kemeny) Veterinary University, Budapest.

BALASZ, Marta, dr.; HUTKAI, Pal. dr.

Chronic pernicious myocarditis. Orv. hetil. 105 no.27:1282-1284 5 Jl'64

1. Orvostovabbkepzo Intezet, Korbonctani Intezet.